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ABSTRACT

Directed at personnel responsible for distance education in India, Pakistan, New Zealand, Indonesia, and the Philippines, the training materials in this publication have been compiled with the help of distance educators in each of these geographical regions. The materials are classified into three categories and presented in separate sections under the following titles: Course Production, Support Services, and Assessment and Evaluation. The topics cover the following areas: (1) suggested guidelines to lesson writers; (2) formulation of learning objectives; (3) experimentation with self-learning lessons; (4) developing a course design; (5) developing a student profile; (6) writing a module for distance learning; (7) organizing tutorial systems; (8) examples of tutorial practices; (9) selecting appropriate media; (10) an overview of assessment and evaluation (Pakistan); (11) assessment and evaluation (New Zealand); (12) evaluation in distance learning (Philippines); (13) developing an assessment system for a distance learning system; (14) an evaluation instrument for module development; and (15) evaluating distance education programs. A list of six publications related to the field of distance education completes the document. (JB)

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Distance Education: Exemplar Training Materials

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INTRODUCTION

The exemplar materials, compiled with the help of distance educators of the region, and presented in this portfolio, were selected, and in some cases abstracted, from among the materials which have been developed by the institutions of the region. It is the outcome of a seminar of National Officials and Specialists in Distance Education held at Allama Iqbal Open University, Islamabad (Pakistan) on 8-18 August 1983.[1]

The selection of the materials is based on a tentative course outline prepared by the above seminar. The materials are addressed to specific categories of distance education systems' staff in the countries of the region, also identified at the seminar.

The portfolio is not exhaustive in terms of meeting the needs of all categories of distance educational personnel. Some categories of personnel were earlier covered[2] and future publications will, it is hoped, be able to continue to offer suitable exemplar training materials for other needs also.

The following table indicates the categories of the staff and levels of education to which the materials are addressed:

Table 1. Area/level of Potential Users of Distant Education Materials

Categories	Subject/topic	Primary	Secondary	Teacher education	Adult literacy	Others	Application		Country of origin
							Pre-service	In-service	
1. Course Production	Suggested guidelines to lesson writers	✓	✓				✓	✓	India
	Formulation of learning objectives	✓	✓	✓	✓	✓	✓	✓	India
	Try out of self-learning lessons	✓	✓				✓	✓	India
	Developing a course design			✓	✓	✓	✓	✓	Pakistan
	Developing a student profile			✓		✓	✓	✓	Pakistan
	Writing module for distance learning			✓	✓	✓	✓	✓	Philippines

1. [APEID] Regional Seminar on Further Training of National Officials and Specialists in Distance Education, Islamabad, Allama Iqbal Open University, 8-18 August 1983. *Training of personnel for distance education, report.* Bangkok, Unesco, 1984.

2. *Distance Learning for Teacher Education: Exemplar Materials,* by a Technical Working Group, Allama Iqbal Open University, Islamabad, Unesco, Bangkok, 1982.

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Categories	Subject/topic	Primary	Secondary	Teacher education	Adult literacy	Others	Application		Country of origin
							Pre-service	In-service	
2. Support Services	Tutorial system	✓	✓					✓	Indonesia
	Examples or tutorial practices	✓	✓					✓	Indonesia
	Selecting appropriate media	✓	✓	✓	✓	✓	✓	✓	Indonesia
3. Assessment and Evaluation	An overview of assessment and evaluation			✓			✓	✓	Pakistan
	Assessment and evaluation	✓	✓	✓					New Zealand
	Evaluation in distance learning			✓	✓	✓	✓	✓	Philippines
	Developing assessment system for a distance learning system			✓		✓	✓	✓	Pakistan
	Evaluation instrument for module development	✓	✓	✓			✓	✓	Philippines
	Evaluating distance education programme	✓	✓	✓			✓	✓	Indonesia

The materials are classified into three categories and presented in separate sections under the following titles.

1. Course production
2. Support services
3. Assessment and evaluation.

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SECTION I

COURSE PRODUCTION

INDIA

Topic : Suggested guidelines to lesson writers

Original source : "Suggested Guidelines to Lesson-writers" by Dr. O.S. Dewal (adapted from *Writing for Distance Teaching*, Open School, Central Board of Secondary Education, 1981).

Introduction

The skills of writing distance learning materials are gradually learned. It requires a conscious effort to see that the desired inputs in a lesson meet certain conditions in regard to content style, language, layout and graphics. Academics working in Distance Education institutions keep checklists before them at all times to ensure that their manuscripts meet these requirements. This paper provides guidelines which may form a basis for the preparation of such checklists. This interesting learning activity may be carried out by the participants themselves during their relevant training sessions. Trainees might also use this set of guidelines to transform a piece of plain text, selected from any conventional textbook, into suitable distance learning material.

SUGGESTED GUIDELINES TO LESSON WRITERS

by O.S. Dewal

The purpose of this material is to place a few suggested guidelines which may be kept in view by writers.

Writing for distance education is not only a different but a difficult task. It is unlike writing a textbook. The purpose of the textbook is to *present* the material. Distance education material not only presents material but also *teaches* students. Truly, distance education material is a *teacher in print*. It is 'self-instructional' and 'self-contained'—'self-instructional' because, besides undertaking the storage and retrieval functions of a textbook, it also teaches; and 'self-contained' in the sense that all the learning content is presented to the student in one place (in most cases), and the learner is not required to oscillate from one source to another.

Guidelines are presented under five main heads. It is hoped that they will elicit critical comments.

Planning

Before writing the lesson, plan in detail, including the following points:

a) Estimating students' entry behaviour;

b) Writing instructional objectives in specific and operational terms;

c) Planning content and presentation keeping in view the age of the student, his expected previous knowledge, language competencies, the time and learning facilities available to him such as a table and a chair, a separate room, electricity. Also plan the study load keeping in mind the limitations of the student's environment like noise, disturbance, and interference frequency and the resources available such as library facilities or the availability of textbooks;

d) Constructing the terminal test;

e) Think hard how variety and humour can be put into the lesson.

Language and style

a) Language used by the writer should be simple but impressive. Short paragraphs and short sentences should be preferred to long complex sentences and paragraphs. It is always better to avoid involved and inverted sentence patterns;

b) Style should be warm, personal and intimate. It should be as if the writer is talking to the student;

c) Never terrorize the reader with an unfamiliar or long word, use familiar and simple words;

d) Make a concerted effort to tie in your material with the learner's experience and vocabulary. In other words, try to build on the learner's previous knowledge and present the content in such language that he can easily understand;

e) Ensure that sentences and paragraphs have *unity* and *coherence.*

Layout

a) The lesson should be divided into suitable sub-units or sections;

b) At the end of each section, put some objective-type questions, called 'in-text questions';

c) Provide correct answers to 'in-text questions' on a separate sheet;

d) A lesson should begin with a small introductory note or general note giving a preview of the content;

e) A review paragraph should be given at the end of the lesson;

f) Important principles should be put in a box;

g) Main concepts may be put in italics.

Graphics

Graphics should be provided if necessary. Graphics have a specific role. They motivate the learner, reduce the monotony and dullness of the page and assist students in assimilating the content. Not infrequently they also help recall. Each graphic should be examined for its criticality, effectiveness and placement.

General

a) Manuscripts must be written on one side of the paper only;

b) A two-inch margin should be kept at the left side of the page. Also about one-inch space must be left at the top and bottom of the paper.

c) Manuscripts should be typed or written legibly;

d) Each page of the manuscript should be properly numbered.

INDIA

Topic : Formulation of learning objectives

Original source : "Formulation of Learning Objectives" by K. Ramachandran (adapted from *Writing for Distance Teaching*, Open School, Central Board of Secondary Education, 1981).

Introduction

The purpose of designing a lesson is to bring congruence among learning objectives, learning experiences and evaluation procedures. This material introduces: (i) definition of learning objectives; (ii) characteristics of learning objectives; (iii) level of objectives; (iv) specification of objectives; (v) specification of degree of performance; (vi) types of learning objectives; (vii) objectives and level of behaviour; (viii) statement of affective objective and (ix) objectives related to manipulative skills. The material can be used as a useful reference guide for formulation of learning objectives.

FORMULATION OF LEARNING OBJECTIVES

by K. Ramachandran

There are several different kinds of human capabilities that are learned through different learning situations. Most of them occur within each of the content areas such as science, mathematics, social sciences, languages and so on. A lesson in any of the content areas is to be designed with reference to the accomplishment of the expected human capabilities or learning outcomes and the prerequisite capabilities they imply.

A lesson in a course is the level at which instruction is generally designed in detail. While designing a lesson it is necessary to achieve internal consistency among (i) learning objectives for the lesson; (ii) methods, materials, media and learning experiences or exercises which will provide appropriate learning conditions for each subordinate capability; and (iii) evaluation of the success of the learners. The purpose of designing a lesson is to bring congruence among learning objectives, learning experiences and evaluation procedures.

Definition of learning objectives

Formulating the learning objectives is perhaps the most important step in the process of designing a lesson. A learning objective is an intent communicated by a statement describing an expected change in a learner. It is a statement indicating what the learner will be like when he has successfully completed a learning experience. It refers to a pattern of behaviour or performance which the learner is expected to demonstrate after completing a learning experience or after reading a lesson. In other words, a learning objective describes an Expected Behavioural Outcome (EBO).

A learning objective is an accurate, precise and unambigous description of an outcome of learning. Therefore, the statement of objectives of a lesson must denote measurable attributes observable in the behaviour of the learner who has gone through the lesson. Otherwise, it would be impossible to determine whether or not the learners have attained the competencies to the required mastery level. The content of a lesson may deal with a single skill, a set of concepts, a set of principles or a problem-solving situation. But, whatever the content of the lesson may be, the objective of the lesson should indicate what the learner will be able to perform after going through it which he was not able to perform before.

When the learning objectives of a lesson are not stated in precise terms, it becomes difficult to evaluate the lesson or learning outcomes of the learners. Once stated in precise terms, learning objectives make it possible to evaluate the accomplishment of objectives by the learners. Objectives facilitate the selection and design of appropriate learning experiences. Decisions about the sequencing of the learning task and the selection of instructional strategies depend upon a precise, operational and unambiguous statement of objectives.

Another advantage of stating objectives in precise terms is that it helps to assess the degree to which the learner is able to perform in the expected manner. Unless objectives are formulated properly, it will not be possible to select test items that clearly reflect the learner's ability to perform the desired skills or the level or the extent to which the learner can demonstrate the acquisition of desired information. Learning objectives also provide the criteria for evaluating the effectiveness of the lesson itself. The word 'criterion' refers to a standard by which the terminal behaviours are evaluated. One of the criteria for the effectiveness of a lesson is the achievement of the learners. Consequently, if learning objectives are formulated clearly, the designer of a lesson needs only to determine how many learners achieved the specified objectives to assess the effectiveness of the lesson.

Often, a learning objective is confused with the description of the purposes of a lesson. For example, a lesson writer with little experience might state the purpose of his lesson as "to develop an understanding of the symptoms of various diseases," or "to acquaint the learners with the symptoms of certain communicable diseases." These kinds of statements in certain cases, indicate the description of the purpose of a lesson. The learner gets 'acquainted' with the symptoms of certain diseases. But what is the purpose of getting acquainted with the symptoms of diseases? What does one expect of the learner after reading the lesson? What will the learner be like, or what will he be able to perform or demonstrate after reading the lesson?

Such statements do not provide a description of the terminal behaviours or the expected behavioural outcomes. The word "behaviour" refers to any performance or activity displayed by a learner and which can be observed or recorded. The phrase "terminal behaviour" refers to the behaviour you would like your learner to be able to demonstrate after reading through the lesson.

The description of the terminal behaviour, in this case, would be "after reading the lesson, the learner should be able to identify a person suffering from cholera or identify the disease of the person from the symptoms." You may notice that the above statement tells what the learner will be able to do after reading the lesson.

Characteristics of learning objectives

When a lesson writer wants to specify the learning objectives, he should try to seek answers to questions such as: what is the learner expected to be able to do after reading through the lesson? In what way should the learner demonstrate what he has learnt? What performance could be accepted as evidence that he has learnt? A good procedure for finding out whether a learning objective is precise and unambiguous is to combine the formulation of learning objectives with the development of test items corresponding to all points stated in the objectives to assess the learner's achievement of the terminal behaviour.

A precisely stated learning objective is concerned with, to the greatest degree possible, observable and measurable behaviour. It should deal with clearly communicable and verifiable behaviour. It should identify the terminal behaviour and specify the kind of behaviour which will be accepted as evidence that the learner has achieved the objective. Objectives which precisely indicate the terminal behaviour expected of the learner are referred to as Behavioural Objectives. For example, consider statements such as "State Boyle's law," "draw the map of India," and "Identify a person suffering from cholera." A key feature of these statements is the action verb such as 'state', 'draw' and 'identify' which describes the terminal behaviour or actions which can be observed and recorded. Using action verbs, you can communicate clerly what you expect the learner to be able to do.

Among the terms which occur very frequently, but which are on a low level of precision and which are somewhat ambiguous in a description of learning objectives, are words such as 'know', 'understand', 'appreciate' (the value of), 'grasp' (the significance of), 'become familiar with', 'believe' and the like. When these words are used in the description of objectives, different interpretations of the objectives are possible by different persons. We should avoid using terms which are vague and which can be given varying interpretations by different persons.

Unless we indicate some explicitly observable signs of comprehension, it will be difficult for us to find out whether a learner has attained the desired objectives. Examples of words or action verbs which have a more unambiguous meaning are 'recall', 'recognize', 'interpret', 'predict', 'write down', 'recite', 'select', 'assemble', 'measure', 'identify', 'solve', 'distinguish between', 'compare', 'contrast', 'state', 'define', 'cite examples of', 'reproduce' and the like. Such words referring to observable behaviour are preferred in the description of terminal behaviour. By using such unambiguous words, you can communicate clearly what you expect the learner to be able to do. An objective which communicates best will be the one which describes the terminal behaviour of the learners in such a way that it avoids any misinterpretation.

Let us look at the following statements of objectives. The learner will be able to:

- know the appropriate conditions for optimum growth of seeds.
- list three conditions which are associated with optimum growth of seeds.
- grasp the difference between pure and impure water.
- appreciate the value of keeping surroundings clean.
- understand the concept of profit and loss.
- calculate the profit obtained or loss incurred in selling a given product.

Do all the objectives stated above communicate the learning outcome clearly? Obviously not. Except for the second and sixth objectives, the others do not specify clearly the observable behaviour. Words like 'know', 'grasp', 'appreciate' and 'understand' do not usually make it easier to give such statements an unambiguous interpretation. What do we mean when we say we want a learner to understand something? It could mean that the learner should be able to recite, to solve, to identify, to distinguish, to compare and so on. On the other hand, words like 'list' and 'calculate' provide a more precise and unambiguous description of a learning outcome or performance expected of the learners.

Levels of objectives

However, it may be noted that it is not always wrong to say that the learner should know or understand a certain situation. But it is not specific enough to guide the development of a lesson. Depending upon the preciseness and specificity of abstractness in the terminal behaviour, we can state objectives mainly at four levels. The most general objectives are those referring to future states of the learners. Subsumed in such objectives are such expressions as "become good citizens," "develop confidence in life," "develop a scientific attitude" and "develop the ability to think critically."

The next level of objectives is concerned with the hypothetical dispositional states of the learners. In such statements of objectives, words such as 'know', 'understand', 'apply', 'appreciate', 'analyse' and the like are used. A few examples of such objectives are given below.

The learner will be able to:

- understand the importance of healthy food habits.
- critically analyse a given poem.
- appreciate the need for personal cleanliness.
- know the methods of food preservation.
- appreciate the value of establishing health service centres to serve the people.
- know the advantages of the metric system of units.
- understand the advantages of immunisation for personal and community health.
- know how to operate a lathe.
- understand the concept of an electric current.

The third level of objectives refers to inferred generative capabilities of the learners. They are concerned with the specifications of the mental processes which are transferred from one situation to the other. They also specify the kinds or types of test items for evaluation of the performance of the learners. Included in such objectives are action verbs such as 'recall', 'recognize', 'see relationships', 'cite examples', 'discriminate', 'classify', 'interpret', 'verify', 'infer', 'generalize', 'reason', 'formulate a hypothesis', 'establish hypotheses', 'predict' and the like. A few examples of such objectives are given below.

The learner will be able to:

- recognize the causes of a commonly occurring communicable disease.
- classify given rocks according to their colour, hardness and porosity.
- recall the different methods of purification of water.
- see relationships between potential difference, current and resistance in a circuit.

– discriminate between pure and impure water.
– classify diseases according to their causes and communicability.
– generalize the reason for the frequent occurrence of a communicable disease.
– formulate and test hypotheses on how water enters and leaves plants.
– predict the effects on the individual of a particular disease.
– predict the weather on the basis of observations on graphed data.

At the most specific level, learning objectives are specified in such a way that they lead to the specification of specific test items for the evaluation of the performance of the learners. In such objectives, action verbs such as 'list', 'define', 'write down', 'recite', 'identify', 'solve', 'select', 'devise', 'choose', 'calculate' and the like are used. A few examples of such objectives are given below.

The learner will be able to:

– multiply a two digit number by another two digit number.
– list the major symptoms of malaria.
– identify a person suffering from cholera.
– cite examples of the different classes of levers.
– devise simple home methods of water purification.
– state Newton's laws of motion.
– choose healthy food habits in the context of the local situation.
– design an experiment to show how soil erosion takes place on the hills.
– solve simple equations.

A lesson writer needs to state objectives mainly at the last two levels of objectives. He should state objectives in precise, observable and measurable terms. Learning objectives should indicate the expected performances of the learners. It means they must indicate the kinds of generative capability to be inferred from the performance of the learner. Even though objectives at the third level are concerned with mental processes, there are usually some external indications of these processes in terms of visible and measurable learner performance.

The writer of the lesson should concentrate his efforts mainly on the development in the learners of different kinds of generative capabilities or mental processes which are generally made observable through actions such as stating, defining, writing down, selecting, identifying, solving, calculating, demonstrating and the like. What is transferred to a new situation are these generative capabilities. If a learner has developed the ability to discriminate or classify or predict or formulate and establish hypotheses in one situation, it would be easy for him to do so in a similar situation or even in unfamiliar but related situations.

Specifications of conditions

A precisely stated learning objective should also describe the condition under which the behaviour is to occur or the performance to be demonstrated by the learner. These conditions include the limitations or restrictions placed on the learner or the material or aids given to the learner when he will be evaluated, to determine whether or not the objective has been attained.

The specification of conditions in the description of learning objectives indicates the prerequisites which define more closely the demand made on the learner behaviour. It describes the situation in which the learner will be required to demonstrate the terminal behaviour. It also describes the test conditions. We do not simply state, for example, that the learner will be able to do it with or without the aid of references, tables or calculating devices. We must also specify if the learner is able to solve a simple equation or a simultaneous equation.

To state an objective that will successfully communicate the learning outcome, it is sometimes necessary to define terminal behaviour by stating the conditions that will be imposed upon the learner when he is demonstrating his mastery of the objective.

There are three types of conditions that may be included in the statement of objectives. First, the aids or tools that the learner will be permitted to use in a test situation such as reference books, notes, calculating devices, tables and so on. The second type of conditions are the kinds of restrictions that will be placed on a learner, such as completing a test within a limited time period. Another type of condition which may be specified is the mode of presentation of information or demonstration of performance. For instance, whether the terminal behaviour is to be demonstrated by writing or reciting or executing a motor skill. Complete and precise learning objectives specify all the conditions under which the performance will be tested. The conditions are generally specified in the following ways:

- Given a picture of . . .
- Given a list of . . .
- Given a set of tools . . .
- Without the aid of references . . .
- Without the aid of tools . . .
- Without the aid of calculating devices . . .
- Given experimental data . . .

A few examples of objectives which specify the conditions under which the learner is expected to demonstrate the performance are given below. The parts in italics indicate the conditions under which the learner has to demonstrate the mastery of the objective.

- *Given conical, spherical and cylindrical objects,* the learner will be able to identify each of them *without the aid of references or pictures.*
- *Given a quadratic equation,* the learner will be able to solve the unknown *without the aid of calculating devices.*
- *Given a number of seeds which have been grown under a variety of conditions,* the learner will be able to list three conditions associated with optimum growth.
- *When presented with a microscope and a slide specimen,* the learner will be able to focus the apparatus and draw a picture of the specimen.
- *Given a blank map of India,* the learner will be able to locate and mark the position of Delhi, Calcutta, Bombay and Madras on it *without using the aid of any reference material.*
- *Following a series of demonstrations on assembling a given machine,* the learner will be able to assemble another machine of the same make, *without using any manual or reference material.*

– *Given a battery, bulb, a key and pieces of wire,* the learner will be able to demonstrate the making of a circuit *by referring to a circuit diagram.*

Specification of degree of performance

Precise learning objectives should also specify the degree of performance, or performance standard, expected of the learner. They should specify the extent to which a learner will be expected to demonstrate the desired terminal behaviour. In other words, they should describe how good a learner's performance must be. They should indicate the acceptable or minimum level of performance at which a learner proves that he has mastered the objective. The following are ways of stating the degree of performance:

The learner will be able to:

– answer eight out of ten questions correctly.
– solve the problems within 15 minutes.
– assemble the equipment within ten minutes.
– measure the thickness of a wire with an error of not more than 0.05 centimetres.

In order to increase communicability, it is necessary to indicate how well we want our learners to demonstrate the performance by describing the criterion of acceptable performance. The particular performance level or standard chosen depends upon the nature of the terminal behaviour and the dimension along which improvement occurs. Let us consider the following cases.

1. Whenever occurrence of the behaviour is sufficient, describe the terminal behaviour precisely.

   e.g. The learner will be able to distinguish between an element and a compound.

   The learner will be able to draw a square, a rectangle, an isosceles triangle and an equilateral triangle as per the measurements given.

2. In certain cases the accuracy of performance may be more important. In such cases, provide a statement of acceptable range of deviation.

   e.g. Given a cylindrical wire and a micrometer screw gauge, the learner will be able to measure the thickness of the wire with an error of not more than plus or minus 0.05 cms.

3. In certain cases the number of errors likely to be committed by the learner may be important. In such cases state the number of error permitted.

   e.g. Given 10 linear equations, the learner must be able to solve at least seven of them correctly.

4. If a performance is to be demonstrated or the task is to be performed with speed, then state the time limit.

   e.g. Given a quadratic equation, the learner will be able to solve for the unknown within two minutes.

   Given a handwritten letter, the learner will be able to type it at the rate of 40 words per minute without committing any spelling errors.

5. If the task is to be performed according to a fixed criterion or a known reference, state the reference.

   e.g. Given a variety of rocks, the learner will be able to classify them according to physical properties such as colour, lustre, hardness and heaviness.

   Given a list of experiments, the learners will be able to list the steps involved in performing the experiment in the same order as given in the manual.

Thus, it could be seen that a learning objective has three components—the action verbs that indicate the terminal behaviour which indicate what the learner is to do; the conditions or circumstances under which the learner is to perform: and the criteria or standards of acceptable performance that tell how well the learner is to perform.

An objective will communicate the lesson writer's intent to the degree he has described what the learner will be doing when demonstrating his achievement. In short, to describe what the learner will be doing. It is necessary (i) to identify the overall behaviour act, (ii) to define the important conditions under which the behaviour is to occur, and (iii) to define the criterion of acceptable performance.

Care must be taken in selecting the terms or action verbs describing the required performance. Some terms may be too general and need to be broken down or qualified. Some may be adequately clear while others may be too vague to be useful for designing a lesson. The terms selected must specify an observable and measurable activity or the product of that activity.

An objective must always be stated in behavioural terms. However, in most of the statements of objectives, the conditions and/or the degree of performance may not be specified explicitly. They may be implied in the statement of objectives. If they are needed to clarify the intent of the lesson writer, they must be stated. If they are obvious, they need not be stated.

In the following objectives, conditions and standard of performance are implied:

- The learner will be able to state the laws of reflection.
- The learner will be able to state the names of the planets in the solar system.
- The learner will be able to calculate the perimeter of a given rectangular figure.
- The learner will be able to perform an experiment to show a chemical property of magnesium.
- The learner will be able to list the symptoms of malaria.
- The learner will be able to translate a paragraph from English into Hindi.

Types of learning objectives

A lesson is concerned with the development of the learners' knowledge, intellectual skills and abilities, attitudes, interests, appreciation and values, and motor or manipulative skills, such as handling of equipment, tools and the like. Objectives can be distinguished from one another on the basis of the kinds of behaviour involved. Thinking, feeling and doing behaviours give rise, respectively, to what are referred to as cognitive, affective and psychomotor objectives. Cognitive objectives are related to the development of knowledge, intellectual skills and abilities. They involve the learner in processes like thinking, remembering, evaluating and problem solving. Affective objectives are related to the

development of attitudes, interest and values. They involve the feelings of the learners. Psychomotor objectives are related to the development of motor or manipulative skills and they involve the learner in some kind of muscular activity.

If the designer of the lesson desires to foster development in the cognitive, affective and psychomotor domains of learning, then one of his tasks is to write objectives which relate to each of the categories.

However, it may be noted that many objectives are a combination of cognitive, affective and psychomotor activities. For instance, in the example of the objective in which the learner needs to demonstrate the making of an electric circuit, he will not be able to do it without remembering the principles involved. In addition to the motor activity involved in it, he may also entertain some kind of attitude or feeling about the activity. However, depending upon the extent to which it involves cognitive or affective or psychomotor activities, it is possible to consider a given objective as falling primarily into one category or another.

It is generally accepted that learning should take place in the cognitive, affective and psychomotor domains but rarely does one specify objectives dealing with affective or attitudinal learning. In most cases, objectives are limited to knowing and understanding. Thinking behaviour and verbal understanding had traditionally been given more importance than feeling and manipulative activities of the learners. Educational status has been more related to cognitive accomplishment and certification than affective and psychomotor development of the learners.

Objectives and level of behaviour

It is possible to distinguish between objectives in terms of their levels of complexity. Within each of the three main categories of objectives—cognitive, affective and psychomotor—it can be seen that some skills or abilities are more difficult to attain than others. More difficult abilities need more preliminary practice. To attain difficult abilities a learner should have acquired a number of lower-level activities. It is generally easily seen in the case of psychomotor development. For example, to learn to catch a ball while running is likely to be more difficult than to learn to catch a ball while standing because the former ability cna be attained only when one can both catch and run.

Cognitive objectives range from simply remembering factual information to skills like analysis and evaluation involving problem solving. In the affective domain at the lowest level, the objective may be to get the learner to pay attention or receive a new experience. At the higher level the objective may be to persuade the learner to attach a value to what he learns. At each level of the hierarchy, there can be objectives that can be attained only by learners who have already attained the objectives at lower levels.

In the cognitive domain, six major levels of learning have been identified. Within each of those levels there are sub-levels and it is possible to distinguish between objectives according to their levels of complexity.

The six levels of learning in the cognitive domain in hierarchical order are as follows:

1. *Knowledge,* which involves recall of specifics from among given materials. A statement of objective could be "to recall the first ten elements in the periodic table."
2. *Comprehension/understanding,* which involves comprehending the knowledge and using it. A statement of objective could be "to interpret the readings of temperature in a time-temperature graph." 11

3. *Application,* which involves the use of abstractions in particular situations. A statement of objective incorporating applications could be, "after learning a lesson on the factors that affect the pressure of a given volume of a gas, and given a change in temperature, the learner will be able to predict the effect of rise in temperature on the pressure of the gas."
4. *Analysis,* which involves identification of concepts or parts of them and of the relation between the parts. A statement of objective could be "given information on the migration of birds, the learner will be able to describe two methods for mapping the movement of a particular bird."
5. *Synthesis,* which involves the assembly of parts into a whole. Discrete elements are arranged or combined into a pattern that was not clear before. A statement of objective could be "given graphs of time-temperature variations, the learner will be able to give an explanation about the causes of variation."
6. *Evaluation,* which involves a judgement about the values of procedures or content. It involves forming a judgement which may involve the application of standards of acceptability given by somebody or by the learner himself. A statement of objective could be "given a newspaper article on the introduction of the concept of the Rolling Plan, the learner will be able to give three reasons for agreeing or disagreeing with the article."

Statement of affective objectives

Affective learning is generally concerned with the internal behaviour of the learners. However, there are some external indicators of the internal behaviour. These provide the means for stating objectives related to affective learning in terms of visible and measurable learner performance. While formulating affective objectives, it is necessary to specify some external activity that is acceptable as evidence of the desired internal behaviour.

Included in the affective domain of learning is a class of learnt capabilities called attitudes. All of us possess attitudes of many kinds towards different objects, persons, events and situations. An attitude influences the choice of actions on the part of the individual. The effect of an attitude is an individual's positive or negative reaction towards some person or object or situation.

An attitude is an internal state, which affects an individual's choice of action towards some object, person or event. It is inferred from observations of the individual's behaviour. An attitude is not the behaviour itself. The strength of an attitude towards some activity may be indicated by the frequency with which an individual chooses that activity in a variety of situations. Thus, an individual who has a positive attitude towards music would tend to choose listening to music over other activities such as playing games, when such choices are possible and when he has the chance and opportunity for leisure. If the choice of an activity by an individual is relatively frequent, it could be inferred that he has developed a positive attitude towards that activity.

In common with the levels of learning in the cognitive domain, affective learning can also be categorized in a hierarchical order. An affective learning continuum embodies the following:

– An emotional quality which is an important distinguishing feature of an affective response at certain levels of the continuum.

- An increasing automaticity as the learner progresses up the continuum.
- An increasing willingness to attend to specified stimuli as the learner moves from lower to higher levels in the continuum.
- Developing integration of a value pattern at the highest level of the affective continuum.

The basic feature of affective learning is the process of internalization. Internalization refers to the inner growth that occurs as the learner becomes aware of and then develops attitudes, adopts principles, codes and sanctions, which become inherent in forming value judgements and in guiding his conduct in a variety of situations. It is the process of incorporating something into the learner's behaviour and not merely conforming to or accepting the values of others.

There are five major categories of behaviour in the affective domain of learning. Learning objectives can be stated in relation to each of these categories. The five major categories in the affective learning continuum are as follows:

1. *Receiving (attending).* This refers to the sensitivity of certain phenomena and stimuli. The learner is aware of the stimuli which initiate the affective behaviour and which form the context in which the affective behaviour occurs. At this level, the learner shows an awareness of values or feelings other than his own. He shows a willingness to listen to the point of view of others. Behavioural objectives incorporating receiving can be stated as follows:
   - After hearing about co-operative societies, the learner will voluntarily attend meetings where there are talks on setting up a producers' co-operative society.
   - After attending a lecture on the utility of science and technology, the learner will voluntarily attend all the science classes.
2. *Responding.* At this level the learner is perceived a responding regularly to the affective stimuli. It involves active attending, doing something with or about the phenomenon and not merely attending the affective stimuli and has begun to seek them out to attach emotional significance and value to them.

   Behavioural objectives incorporating responding can be stated as follows:
   - During a talk by an expert on the advantages of producers' co-operative society the learner will ask questions related to the steps in setting up a co-operative society in his village.
   - Following a lecture on the laws of motion, the learner will voluntarily read books dealing with the contributions of Newton to different branches of physics.
3. *Valuing.* This level implies behaviour leading to the perception of certain phenomenon as having worth and consequently revealing consistency in behaviour. Valuing describes increasing internalization of one's value system. It involves acceptance of, preference for, and commitment to a value.

   Behavioural objectives incorporating valuing can be stated as follows:
   - After attending talks on the setting up of a co-operative society, the learner will discuss with others the advantages of co-operative societies.
   - Following lessons on ecological balance, the learner will talk to others about the need for taking steps for conservation of natural resources.

4. *Organization.* As the learner successively internalizes values, he comes into contact with situations for which more than one value is relevant. This leads to the organization of values into a system. It involves conceptualisation of values and the employment of these concepts for determining the inter-relationships among values. Behavioural objectives incorporating organization can be stated as follows:
   - Following a discussion on the various aspects of a producers' co-operative society, the learner will argue for the setting up of a co-operative society and support efforts for it.
   - Following a lecture on the disadvantages of destroying trees, the learner will persuade others not to destroy trees in their surroundings and to plant more trees in the surroundings.
5. *Characterization by a value or value complex.* The organization of values, beliefs, ideas and attitudes into an internally consistent system is called characterization. It is the highest and most complex level in affective learning. At this level the learner responds very consistently to value-laden situations with an interrelated set of values, a structure and a view of the world. He views all problems in terms of their aesthetic aspects and displays readiness to revise judgements and to change behaviour in the light of evidence. He develops a consistent philosophy of life.

   An example of an objective which incorporates a description of the existence of an internally consistent set of values is:
   - During discussion or group discussion on the need to conserve natural resources, the learner will logically and consistently exhibit a particular viewpoint and state his reasons for holding that particular point.

   It may be noted that although the examples of affective objectives given above were designated as behavioural ones, they do not include clear-cut criteria for assessing the performance of the learners. The very nature of affective objectives, which are themselves value-oriented, makes it difficult to state them in clear-cut behavioural terms.

The nature of affective learning varies from individual to individual and therefore, whether they have been achieved must be judged in terms of individuals and situations. We should be careful not to impose or to expect every learner to conform rigidly to any one affective objective. Care must be taken in selecting the actions, or words used in describing affective objectives. They must represent voluntary activities and must be appropriate to the particular learning situations.

For example, if punishment is awarded for not attending mathematics classes, "100 per cent attendance in mathematics classes" would not be an appropriate indicator or index of performance. In the case of affective learning, what is to be sought therefore, is a varying pattern of achievement with learners achieving different objectives to varying degrees.

Objectives related to manipulative skills

While designing a lesson, we are also concerned with the development of capabilities involving the ability to demonstrate a manipulative or motor skills. Manipulative skills

are also referred to as 'perceptual motor skills' or 'psychomotor skills' implying that the learning and performance of motor skills involves the human senses, the brain as well as the muscles.

Motor skills are learnt capabilities that underlie performances whose outcomes are reflected in the speed, precision, accuracy, force, smoothness, co-ordination and rapidity of bodily movements. They are visible physical actions involving acting on something in the environment or changing the position of location. Examples of motor skills are riding a bicycle, driving a car, opening the cap of a bottle, jumping, performing an experiment, using tools, handling equipment and machines, using a pencil or pen for writing, drawing pictures, writing with chalk, typing, painting, using a variety of measuring instruments and engaging in various outdoor games.

If a lesson needs to deal with manipulative skills, it is necessary to state the learning objectives in behavioural terms, indicating the range of conditions under which the learner is expected to perform the act and, wherever possible and appropriate, the standard of accuracy and speed. However, care must be taken to see that objectives are not broken down to such an extent that they become trivial. We need not convert every simple behaviour involved in the performance of a physical act into a learning objective. State only the most important and inclusive act, but in precise and behavioural terms.

Compared to learning in the cognitive and affective domains, in the case of the learning of manipulative skills it is easy to state objectives in behavioural terms. Some of the action verbs which could be used in the statement of objectives related to manipulative skills are 'adjust', 'align', 'draw', 'construct', 'assemble', 'connect', 'disconnect', 'measure', 'load', 'operate', 'replace', 'type', 'handle', 'ride', 'drive', 'repair', 'fasten' and so on. Many more action verbs could be added to these.

INDIA

Topic : Try-out of self-learning lessons

Original source : "Try out of Self-Learning Lessons", by Dr. S.P. Mullick (adapted from *Writing for Distance Teaching*, Open School, Central Board of Secondary Education, 1981).

Introduction

Values of try-out of self-learning lessons need not be stressed. Many writers of distance teaching materials, no matter how creative and skillful, experience disappointment when the independently developed final products of their individual labour suffer with shortcomings at the learners end. Reasons are simple: (i) writers tend to be more interested in content than student learning; (ii) while developing a lesson for use outside the classroom situation, students reactions to a lesson or a part of it, are imagined and not actually seen or heard; (iii) enrolment in distance education courses usually runs into thousands; and (iv) usually the deficiency in study material is made up by developing, printing and making of extra supplementary material, provision of additional tutorial services and sometimes by reinforcement of lessons through radio and T.V. This raises costs. The try-out of self-learning lessons is in two chronological stages: (a) the individual student testing stage; and (b) the group-testing stage. The merit of this paper lies in the fact that it provides a systematic procedure for testing the material on learners, before it is finally printed. Useful proformae have been added at the end for recording student reactions.

TRY-OUT OF SELF-LEARNING LESSONS

by S.P. Mullick

Self-learning lessons are those from which students learn on their own without any external help. They are designed in such a way as to produce measurable learning effects on intended groups of learners. They have three distinct features. They specify the intended objectives in observable and measurable terms. They prescribe a post-test consisting of test items and testing situations designed to obtain evidence as to whether intended learning has taken place or not. The material is presented in graded steps interspersed with in-text questions designed to provide feedback to the learner about the adequacy of his learning.

The process of learning through the lesson has three specific features. First, the learner is required to focus his attention on a limited amount of material given in a step. Second, he is required to respond in some way to the in-text questions given after each step. Third, he is required to check his answers. These three features constitute the learning cycle. The material given in each step and in-text questions are selected and

ordered on the basis of empirical tests. The lessons are tried out on samples of intended learners and are revised, if necessary, so that they contribute to the learning of the students.

The try-out of the lesson is the process of studying the interaction of the learner with the lesson to discover the weaknesses in the lesson so as to improve on it. It is divided into two chronological stages: (a) the individual student-testing stage, and (b) the group-testing stage. These stages are distinguished on the basis of action which is taken as a function of the data to finalise a programme. These are enumerated below:

The individual testing stage

This stage mostly follows the finalisation of the first series of steps. The methods of this stage tend to be clinical in the sense that more reliance is given to close observation or often interaction with a student individual. The lesson writer intends to obtain feedback from his students from the very beginning and thus proceeds with testing each step word by word till he is sure of the effectiveness of each of the steps. The prime concern of the writer here is whether the learning material presented actually gets across to the student, in order that the student is able to demonstrate the specified behaviour output as a result of the learning experience. In this connection the writer examines all the examples and analogies, in terms of their pertinence and relevance.

Testing the lesson to get systematic answers to questions of effectiveness, therefore, requires a judicious choice of students. Needless to say, the students should possess the entering behaviour which the lesson demands and the testing situation should be made conducive for the student, so that they can become informal, vocal, critical and pose teaching problems. Care should be taken to find students who can risk asking even a 'stupid' question because often it is observed that the stupid questions point out significant faults. In selecting the students, care should be taken to make a representative sample of the target population, ability-wise. The danger is that the self-learning material which caters very well for the bright students may not be useful for the dull group.

At this stage the number can be as a small as three to five students depending upon the nature of the material and the changes and modifications being suggested by each subsequent tryout. It is said that the individual student testing stage yields diminishing returns. The first students' tryout goes a long way in smoothening out a self-learning material. It is able to indicate quickly which points have not come through, which explanations are misleading or difficult and whether the order of presentation requires reshuffling or not. This stage is to be terminated when the writer is satisfied that the later students are unable to yield any more useful data. One of the ways of knowing whether a lesson has reached such a stage or not is to look for subsequent students pointing out more or less the same difficulties. There are no well-laid principles of conducting individual student testing, but some guidelines for writers are suggested below.

Guidelines for individual testing

i) Establish an effective rapport with the student. He should not feel threatened, as if you are going to test or examine him. Make the distance between you and the student small because this is not the time to insist on keeping a respectful distance

ii) As far as the tryout phase is concerned, to err is divine. Make no secret of this to the student. Emphasize further that the questions in the lessons are not testing him but merely helping the programmer to modify the material.

iii) It is better to arrange the steps and in-text questions in cards, so that you can handle the sequence easily. Sometimes it is better to write the confirmation of each in-text question at the back of the card. The danger in writing your confirmation on the next card is that you are not sure of the final sequence at this stage.

iv) How do you tell him the correct answer? Do not quickly say 'correct' or 'right'. It is not important at this stage to be netural. It is advisable to sound encouraging. Much of the motivation of the student depends on how much warmth you have put in the intonation of the words.

v) Keep a paper handy and note down your observations about how the student is interacting with the steps. In terms of student responses a proforma (No. 1) is given hereafter, which may be useful for recording the students' reactions. You may use that or any other proforma you design. It is useful to give a proforma (No. 2) to the learner to give his written responses and comments and suggestions after each step.

vi) For each step you will record your editing comments. In order to make this recording short and useful, a system of abbreviations for jotting down editing comments is given below.

R	–	Review needed
NR	–	No review needed
LS	–	Large step
SS	–	Small step
F	–	Figure needed at this point
NS	–	Out of sequence. This step should be moved to some other position.
DS	–	Drop this step. It is not needed.
Ch. Q	–	Change the in-text question number.

vii) If the student commits an error tell him that his answer is not correct. Usually he will read the step again and come up with an alternative answer. If the second answer is correct ask him why he committed an error in the first place. Do not suggest any possible causes. Loaded questions are ruled out. Probe into his reply till he becomes specific.

viii) If the second answer is also incomplete, correct his reasons for both the responses. If it suggests any defects in the step, make suitable modifications in the step.

ix) Note the time at the beginning and at the end of the lesson. Write down the number of the step at which the student happens to be at every 5 minute block. This procedure will give you a better indication for arriving at an optimal step size.

x) Take the editing comments and the data collected in the individual tryout stage and revise your lesson, if necessary, in consultation with a subject matter expert. Now your lesson is ready for group testing.

The group testing stage

Data obtained from this stage will supplement the information obtained in the earlier stage of individual testing. It further gives information as to the score distribution of a large group of students. This information is vital before a decision to publish a programme for wide use is taken. It is generally agreed that the error rate of in-text questions should not be more than 10 per cent. Score distribution of a large group of persons

on the post-test should be highly skewed, with the model group obtaining about 90 per cent scores. If any lesson falls short of these standards then it should be suitably revised. The data will be further utilized for describing the product to the users. This is done by stating who learns what, under what conditions and in how much time.

Guidelines for conducting group testing phase

The self-learning material is to be administered to a representative group of about 50 to 100 students and the performance of the students is to be studied in real situations with the help of statistical data. This work may be done in a school or in a contact programme. A proforma (No. 3) for conducting step-analysis is also given at the end of this note. If the error rate of any in-text question exceeds 10 per cent, it is liable to be scrutinized, because errors committed on these questions signify failure to impart the intended instructions. In addition to responses to in-text questions, the data from the post-tests are also analysed carefully. It is better to record the performance on post-tests item-wise. Thus a proforma (No. 4) is suggested at the end of this note to record student performances on the various post-test items. The writer should be careful to note exactly how many students have failed on each post-test item. This information should be utilized to locate the concepts, questions and items in the lesson which are responsible for failure. Thereafter, the relevant step or sequence of steps should be revised accordingly.

The post-test score in proforma No. 4 is to be further analysed. Of late the so-called 90.90 criteria, i.e., the criterion of 90 per cent of the students scoring 90 per cent scores on the post-test, has been differently emphasized, but the author will do well to define criterion that may satisfy him.

Proforma No. 1

Title : . . . . . Individual Tryout Lesson administered at . . . . . Time . . . . . Completed at . . . . . Time

Step No.	Time taken in completion	Student responses			Student reaction			Step to be revised	Editing comments
		Right	Wrong	Needed explanation	Reaction of showing easy go over	Reaction of being blocked	Reaction of tiredness		

20

28

29

Proforma No. 2

Response sheet for the students during early tryouts

Intext Q. No.	Answer 1	Comments 2	Suggestions 3	Remarks 4

Note. In column 1 the student always gives his response. In columns 2 and 3 he may add comments (question not clear) and/or suggestions (use more simple language). In column 4 the experimenter may introduce brief scoring or category marks to aid him in synthesizing the information. Columns 2 and 3 might often have a double effect: (a) they add to the experimenter's information (pinpointing inadequancies), and (b) they make the task more interesting and motivating to the subject (reducing his feelings of anxiety, making him feel more like an important co-worker).

Proforma No. 3

Proforma for Step Analysis

Title of the programme: . . . . . .
. . . . . .

Intext Q. No.	Total No. of students who responded*	Total No. of students who responded incorrectly	Error rate

Proforma No. 4

Lesson title:

Lesson administered to the group at . . . . . .
Time

Lesson completed at . . . . . .
Time

Average time . . . . . Hours . . . . . .

Students	No. of items in the post-test	1	2	3	4	5	. . . . . n	Total
No. 1								
No. 2								
No. 3								
No. 4								
No. 5								
Total								

PAKISTAN

Topic : Developing a course design

Original source : Reproduce with permission of Vice-Chancellor, Allama Iqbal Open University, Islamabad. Adapted from "Developing Correspondence Material as part of a Distance Learning System", pp. 6–13.

Introduction

Designing a course is the foremost task in the development of any self-learning text. This material introduces four major sequential steps leading to an effective course design; (i) formulation of a broad course outline; (ii) preparing an expanded version of the same; (iii) a production plan; and (iv) the evaluation of the course ('evaluation' here is of the course not the students). The material had been specially written as a learning aid to those who needed to be trained in the area of developing and writing correspondence courses. Its merit lies in the fact that it is itself written in the form of a correspondence text. Lesson on "How to teach through distance learning" are perhaps better learned when they themselves employ the same distance learning formats.

The following features of presentation may be noted: (i) in a self-study situation there being no teacher between the student and the book, the material has been presented in a personal style as if an 'invisible teacher' speaks to his students; (ii) the format actively involves participants by making them carry out different learning activities; (iii) the language that has been used is functional and simple; (iv) self-assessment questions (SAQs) have been built into the text; and (v) the study material has been broken into digestable paragraphs that have been numbered to facilitate a scheme of cross-referring. What may further interest the reader is the multiple use of these SAQs in the whole self-learning process. In this case SAQ 2 may be specially noted. With it the learners are immediately led to an appreciation of their own practical situations in contrast to the description of an ideal view with which the lesson began.

DEVELOPING A COURSE DESIGN

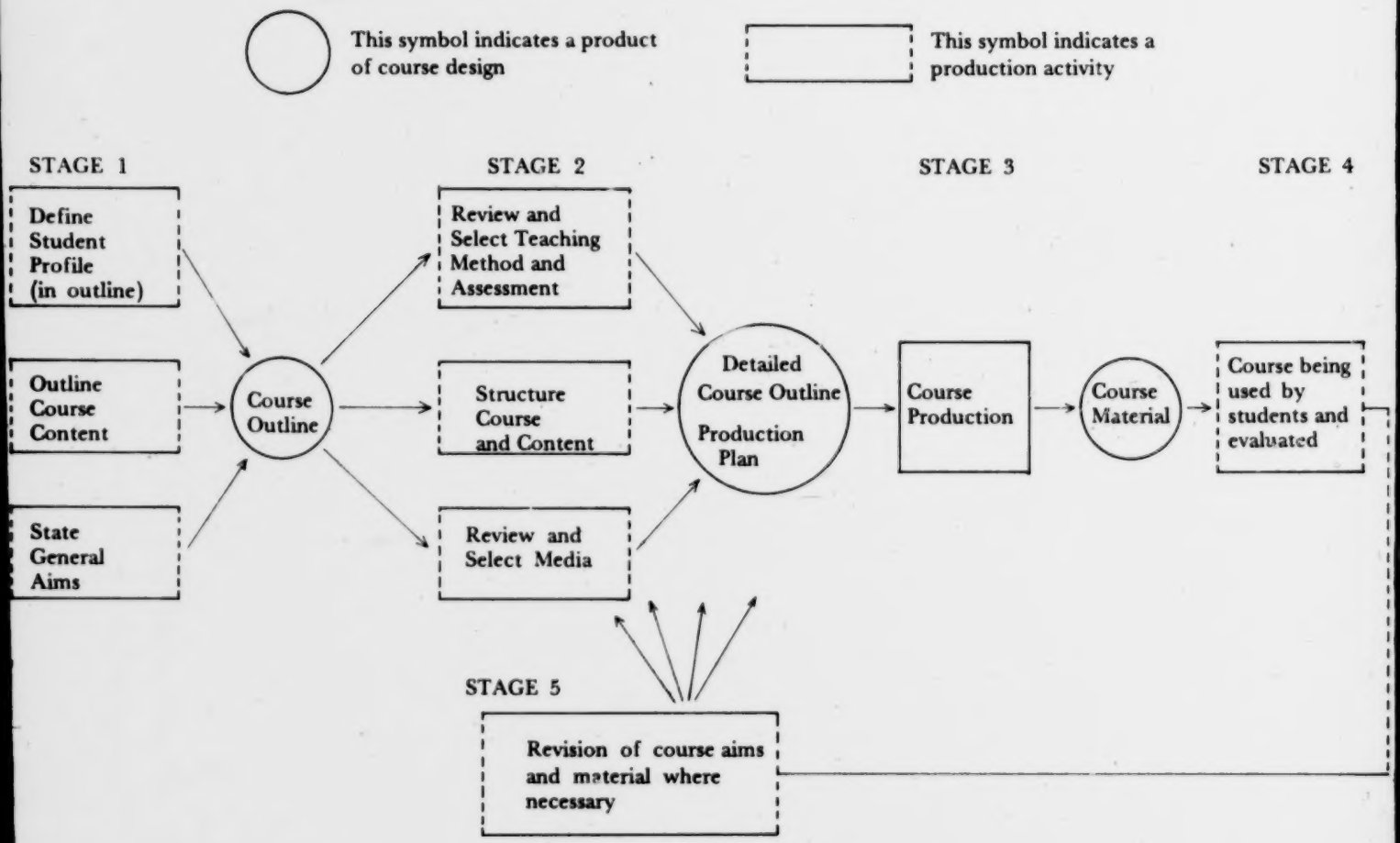
An idealised view

Have Diagram 1 in front of you as you read the section. This diagram shows an idealised flow of events for course design. It is idealised in two ways, first that all the events take place, and second that they take place in that order. Some of the boxes or circles are self-explanatory and so only a selected number will be explained.

a) **Course outline**

This will contain a general statement about who the course is meant for, some of their major characteristics such as their entry qualification level, what the course will be about (a list of topics and the general orientation will do), the aims of the course in terms of what the students should achieve.

Diagram 1. Course design: an ideal flow diagram



b) **Detailed course outline**

This is an expanded version of the outline described in (a) above. The expanded outline should contain a clear statement of the aims of the course and if appropriate the objectives. The objectives will be more detailed statements of the aims and should, as far as possible, reflect what students will be able to do on finishing the course. There should then be an outline of the course structure in terms of how it will be tackled and split up into units of work. This should also include the kinds of assignments the student will be assessed on and the other activities he will carry out. Last, but no least, the role of media other than the printed text should be considered.

SAQ 1. From the above description construct a contents list (or list of section headings) of the Detailed Course Outline. (Try this question and then check your answer with those at the end of the section).

c) **Production plan and course production**

These will be dealt with in Section 7. It is worth pointing out the 'trial' or developmental testing which will be part of the Course Production. Before the final printed course material is produced it is desirable to try out the material on a group who would resemble your students. This will have to take place at a point in the production schedule when the material is near its final state but when there is sufficient time to change it if the testing warrants it.

d) **Course being used and evaluated**

The use of the course needs no explanation, but evaluation does. (Evaluation here is of the course not the students). Even with developmental testing the course will not be perfect and it will be necessary to monitor its use by the students. This is not the place to go into details, but it is important that you plan a systematic evaluation of your material. The two basic ways this can be done are by special studies on all or a sample of students, and by examining how students have performed in the assessment. The former can be done by means of surveys or interviews and the latter by looking at the kinds of mistakes or misconceptions students have. Whatever way it is done, evaluation must be systematic. This topic will be the subject of a future workshop.

The practical view

In 'real life', course design does not work as well as indicated by Diagram 1. For example academics tend to be more interested in content than student learning; the objectives of the course do not become clear until some attempts have been made to produce material etc.

SAQ 2. What activities do you think would be most likely to be missed out completely, especially if things are running late?

Despite these difficulties if a course is to be well produced the activities shown in Diagram 1 should take place, irrespective of whether or not they take place in the order shown.

a) **Developing correspondence material**

The whole design process shown in Diagram 1 represents this development of material, but Stage 2 is a crucial one where many of the important decisions are made. The workshop will be mainly concerned with the top two boxes: 'Review and Select Teaching Method'; 'Structure Course and Content'. However it will not deal with the first of these directly. Instead of thinking of teaching method we will consider the student's learning requirements and then the various devices which can be employed to suit these requirements.

b) **Student learning–'theories'**

Educational psychology abounds with learning theorists, but few claim to have any complete theory of learning. Most work in this field does point to sensible things that ought to be followed. For example the basic assumption about 'interaction' referred to in the 'Introduction and guide to the workshop' is borne out by research into reading; students who have to read a text in passive purposeless way perform poorer on tests than those who have to keep questions in mind as they read, or read the text with a definite purpose. Most of the hints of research into learning apply equally well to face-to-face teaching as they do to correspondence teaching. What is different about correspondence material is that the techniques of making student learning affective are different. It is for this reason that this workshop does not explicity deal with teaching method, as stated in (a) above. Rather you will be considering things: which help students to find their way through the material i.e. learning aids and graphical design; which make student learning active i.e. student activities; which give the student a clear picture of what he has to learn i.e. course and course book structure. You will notice that these are all topics for the workshop.

Having said there are no theorists with a theory of learning it is only fair to mention Skinner for his work on the stimulus–response model of learning. He would claim that this is a comprehensive model of learning, but many would take issue with this. There is no doubt that in some learning situations this model of learning is appropriate and material design on this basis is effective. In fact programmed learning was a direct result of this approach.

SAQ 3. Which of the following situations would benefit from using the Skinner model of learning as a basis for designing the course? Give reasons for your answer for each situation.

- producing a creative writer
- teaching the basic vocabulary of a foreign language
- teaching domestic circuit wiring
- teaching degree level physicists

c) **Student learning–being didactic**

One useful dimension of thinking about student learning is to ask how didactic should the learning situation be? Programmed learning is highly didactic, it treats the students like a passive receptor who follows what the teacher says. The other extreme–is to let the student control the learning situation (this is often called socratic learning). In this case students would have an information

bank (which could be a teacher) and he interrogates it in the way he thinks fit. So in thinking about what teaching method to employ, you could simply answer the question. "Do I want to control the learning situation or will the student? "

SAQ 4. How would you answer the above question for this particular text which you have been studying?

After making the above decision then you can use the techniques which form the topics for this workshop to implement the style of learning you think is appropriate.

Self-assessment question (SAQ) answers

SAQ 1. 1. Aims and objectives of the course

2. Course structure : (a) topics; (b) assessment; and (c) major activities.

3. The role of other media : (a) radio; (b) T.V.; and (c) still pictures (e.g. slides).

SAQ 2. The most likely one is evaluation. Revision of materials might also be missed because once a course is produced the people involved tend to 'loose interest' and move on to other things.

SAQ 3. A creative writer will presumably need to be able to produce original pieces of work and hence it will be impossible to predict what this work will look like. The stimulus–response model assumes that there is a desirable response to any particular stimulus. (Eisner in the field of art education has useful thoughts on this situation). Thus the Skinner model would not be appropriate here.

In teaching vocabulary there is probably a case for employing the stimulus–response model because this is a highly instructional situation. The student just has to learn the words and at an elementary level there will be no doubt as to meanings of words. Teaching domestic circuit wiring can also benefit from the Skinner model because there are closely defined procedures which can be broken down into tasks to be learned using the stimulus–response model. (You will be dealing with Task Analysis in Section 6, course and Course Book Structure). However there will be certain areas where initiative will be required outside the procedures defined in the teaching.

The teaching of physics at degree level is a difficult one because it will depend upon your view of what makes a physicist. Some may see it in terms of knowing a body of knowledge, others in terms a some general ability to solve problems of interest to physics. The former will benefit from the Skinner model, the latter will not.

SAQ 4. This is a structured text which assumes that you, the learner, will study the material as it is layed out so in that sense it is didactic. However the headings and the SAQ's will allow you to use the material in a way which suits you. For example on looking at Diagram 1 you may feel you understand what all the boxes mean except say 'Course Being Used and Evaluated'. In this case you can turn to page 25 see para. (d).

PAKISTAN

Topic : Developing a student profile

Original source : Reproduced with permission of Vice-Chancellor, Allama Iqbal Open University, Islamabad. Adapted from *Developing Correspondence Material as part of a Distance Learning System*, pp. 14 - 30.

Introduction

This material presents another example of a self-study text. Even the print layout of each page makes it a distinct reading when compared to the plain text we often find in a conventionally written textbook. What is worth noting in this part of the material are the kinds of examples and the learning activities that have been included. Conscious of the fact that the learners will immediately get bored with a long list of variables which may define a target population, over the front page, a message in the 'box' says "For the moment do not read the details of the list but only the major headings and sub-headings (labelled a,b, c etc.). These are known as student aids and no matter how insignificant these may appear, they play a very important role in helping students through their texts particularly in a self-learning situation. Contents covered in this part of the material relate to the development of a student profile, its importance and relevance to the preparation of appropriate correspondence lessons."

Present readers may find it useful to study and carry out the worked example 1 (page 33) and the subsequent activities that have been based on this example (page 38). This exercise certainly demonstrates an easy way of learning about drawing up a student profile for a given situation. Needless to say that teachers in distant learning institutions often find it a difficult job to do.

DEVELOPING A STUDENT PROFILE

What is a student profile?

This is simply a description of your students; what they are like as learners and what their learning situation is like. There are obvious differences between students, for example urban students are different from rural ones. Urban students will have electricity and can therefore study in the evening; they are more geographically concentrated and hence can meet; they may have access to a library; they may be able to afford writing materials; they may have a higher level of schooling than rural students.

In fact you could draw up an endless list of things to describe your students, but for convenience it is better to think of them under headings. We have employed four major headings: Basic data; Life styles; Infrastructure; Study habits.

> Look at Check-list 1 to see what is included under these headings. For the moment do not read the details of the list but only the major headings and sub-headings (labelled a, b, c etc.) because you will be going into details later.

CHECK-LIST 1

Target population

1. Basic data
   a) rural or urban; other group designations, age groups, sex
   b) primary occupation (full-time/part-time learning implications)
   c) degree of literacy (nil, low, medium, high, definitions and criteria)
   d) primary reason for choice as target (primary learning needs)
   e) educational standards likely at start of programme (use country's own categories).
2. Life-style
   a) housing

      single or multi-roomed; insubstantial/substantial building; brick, mud, stone; isolated, groups, village, town; nature and size of family groups; density of occupancy; availability of privacy; equipment and facilities.

   b) nature of work and working hours (including schooling)

      seasonal, non-seasonal; sex differences; age differences; work near/far from home; meal break customs; siesta customs; working and non-working days, holidays vacations.

   c) economics

      per capita family group income; consumer goods patterns, likely possessions –radio, TV sets, tape recorders, writing materials, books, record players, vehicles or means of transport.

   d) non-work activity patterns

      regular or habitual 'ritualistic' patterns e.g. going to nearest town, marketing, village moots, social gatherings, attendance at religious functions, cinema or film-show attendance, story telling, sports, music, singing, use of libraries.

   e) attitudes and aspirations

      educational motivation; social patterns within community; tendency to move to towns if rural and vice versa if urban; span of attention.

   f) extent of understanding of non-oral communication (special considerations)

      e.g. conventions for pictorial representation, suitability of conventional 'western' visuals, significance of colour.

3. Infrastructure

   a) general house services (and reliability)

      water, electricity, gas; main drainage—means of lighting, extent of lighting and power in house.

   b) local services

      existence, regularity, reliability—post, telephone or like means of communication; school buildings or rooms, libraries, information centres or services, newspapers or news-sheets, shops—books, writing material, etc.; frequency or availability of school-teachers, tutors, trainers, advisers etc.; road, rail, river etc. transport—time for travel, buses, etc. to or within towns.

   c) regional and/or national services

      postal, telephone, roads; schools, colleges, universities; broadcasting; advisory services; resource centres; rural or urban development schemes.

4. Study habits

What use is a student profile?

Think of a teaching situation you are familiar with, does it matter how old your students are; if they are literate or not; whether they know anything about the subject you want to teach? In some cases it may not matter; in others it will, you cannot make certain decisions about how and what you will teach unless you know some of this information.

Generally teachers of all kinds pay very little attention to understanding their students. Some of you may feel that in the past in face-to-face teaching you knew your students abilities and study conditions quite well. That may be so, but when teaching by correspondence you have to think about a lot more variables. You cannot for instance assume that students have a desk or table. If he does not then it would be unreasonable to ask him to spread out several books and booklets and study them simultaneously. (Unless you want him to do it on the floor!)

Now the Student Profile can be used at two levels what will be called policy level and design level. At the policy level you will ask yourself if students have a telephone, if not then you will not use it as a means of tutor contact. Or more obviously if students do not have access to a radio you would not use it as a teaching medium. These are decisions made when you first set up a distance learning system. At the design level, which is the central concern of this workshop, you may find out that students know nothing about the topic you want to teach (and which they presumably want to learn!) therefore you must start right from the beginning.

> Look at Check-list 1 again. Would you say the variables under infrastructure mainly relate to policy or design levels?

Comment

Mainly policy, although you will notice that those under (a) would relate to design; for example the lack of running water will mean that experiments associated with the correspondence material cannot make use of it.

How detailed ought the student profile be for the design of material?

That's impossible to give a single answer to. You will have to generate as many details (or variables) as you can think of and then select those which you think are relevant to your particular teaching situation. Below is a list under the headings:

Study environment: direct; Environment: indirect;
Study conditions: student skill; Study condition: psychological.

> Look through this list noting the major headings and sub-headings

Study environment: direct

Conveniences	– electricity (light) table etc.
Atmosphere	– quiet, comfortable, disturbances (privacy)
Equipment	– radio, record players, paper, pencil etc. (tap)
Time available	– working hours leisure activities
Physical education	– tiredness etc.

Study environment: indirect

Source of learning situations	– access to schools etc. – work situation as resource – geographical area – access to other books etc.
Location	– nearness to study centres, distance from other students transport availability
Ease of contact	– post telephone
Support from family	– affects isolation and length of periods of study

Study condition : student skill

'Style' — reading level
reading style
learning strategy skill
(skimming, selection etc.)
note taking

Entrance knowledge

Maturity — to organize and generally be independent.

Study condition : psychological

Motivation and student objectives
Attitude to assessment and accreditation — need of qualification
Attitude to new/old learning modes — maturity (knows what wants)
Confidence

How would you draw up a student profile for a particular situation?

Below is a worked example which will help you in doing such an exercise for your own situation.

Example 1

Let us consider a hypothetical African country called Zatina. The course being proposed is for initial teacher training of primary school leavers (those finishing primary school) minimum age 14 years. This group is chosen to achieve universal primary education by increasing the supply of teachers dramatically (we can discount the difficulties and even desirability of such a task). So this group provides a supply of people who will probably be glad of salaried employment (as opposed to subsistence farming) and who have at least the basic minimum of education. These trainee teachers will be teaching and studying part-time with some face-to-face teaching initially and during holidays. The material will aim to upgrade their knowledge of the school subjects, help them with teaching method and give them some background in the purpose of education in Zatina.

Target population (see Check-list 1)

1. **Basic data**

85 per cent rural (take-up of students possibly biased towards urban?) Females given priority to provide balance of sexes.

Probable age 16.

Previously unemployed (not taking graduates straight from school).

Literate

Chosen because : cheap to employ; aspirations not too high; adequate level of education; likely to be available in sufficient numbers.

Primary leaving certificate : very basic knowledge of subjects e.g. maths, language, general knowledge etc.

2. **Life style**

a) Housing

Single or two-roomed house, made of mud or crude mud brick, and situated in a village (a proportion live in isolated hamlets). Little, privacy, few facilities (likely to be no tap water and certainly no electricity or light source). Access to a radio is likely.

b) Work

Working hours for school 8 a.m. – 12 noon, 2 p.m. – 4 p.m. or 8 a.m. – 2 p.m. but seasonal (gets dark around 6 p.m.) 6 day week.

No holidays for rural population.

School holidays will be about 12 weeks but there will be seasonal variations for planting and harvesting.

c) Economics

Per capita family income US $ 80. Few if any possessions. No table, paper, books and other writing materials–a pencil. School will however, have such facilities, although paper is in short supply. Most travel by foot (15 miles or more) although buses to and from towns are available.

d) Non-work activity

Family and friends conversing, story-telling. Village and family dancing. Strong oral culture.

e) Attitudes and aspirations

If qualification leads to employment motivation will be high. For secondary school drop-outs or graduates there is likely to be a desire to use the qualification for higher things. Primary school graduates may see teaching as fulfilling their aspirations (rather than as a stepping stone to a government job).

Generally a drift to town takes place.

f) Non-oral communication

Literacy in village low, 20 per cent, but some newspapers are available usually few days late. (Production of newspapers based in regional centres which are few and far apart).

Visually unsophisticated although films do tour the villages by mobile units. Student population used to books and pictures. Posters not frequently seen.

3. **Infrastructure**

a) Water from well-piped water increasing but communal. No electricity or gas, oil lighting but not extensively used. Latrines are increasing in use.

b) Postal service reliable but slow.
Few telephones–occasionally found in local party headquarters. Most villages have a school building with four or five classrooms but they are very basic–no electricity or water, but with blackboard and old desks.

Writing materials can be bought.
Radio service; college head-teachers are a form of support as well as District Education Officers.

c) Good inter-city postal service and telephones (except rainy season). Roads between large cities good or adequate (50 per cent with metal surface). Rail services good between cities although slow.

Good micro-wave coverage for national radio service, colleges in most large towns.

Libraries in cities only (although colleges have libraries).
Teacher colleges can provide support services.

4. **Study habits**

School learning is largely by rote with very little pupil activity—class chanting common.

Teachers are very dependent upon books, increasingly student textbooks are becoming available.

No independent work done by the pupils. Very little practical work done, however increasingly teachers are trying to relate classroom work to the world of village.

Pupils obey the teacher without question and do not criticise the teaching.

Little reading done outside school.

Pupils do write daily in school as well as read.
Little inter-pupil communication in the classroom.

(Note: This category has been added to Check-list 1)

What relevance have the student profile variables to designing materials?

Using the Example 1 above the variables are shown below on the left and their relevance on the right – using those variables specifically related to design.

Example 2

Variables		Relevance (Specifically to material design)
Study environment (Direct relevance)		
Conveniences	– no electricity – no table	Study done in late afternoon/early morning? Work done on floor or knee (implies robust course books with hard cover?)
Atmosphere	– probably not quiet, comfortable or undisturbed unless student studies away from home	Design material in short places without too much 'reading only'

Course production

Equipment	– will be able to listen to radio will have pencil perhaps pen (school can issue). No running water. No paper.	Design workbooks where answers or student activities can be carried out. Alternatively leave space in teaching text. Limited use of water in any practical work–static use only and preferably reuseable.
Time available	– 2-3 hours in the afternoon + day off. Holidays also provide a period for study.	As above short work pieces well sign posted for students to leave off work and re-start. (It may be that the course should be self-paced but this has implications for independence and maturity of students as well as radio broadcast timing). Work must also be directly related to classroom work.
Physical condition	– probably tired after teaching, diet may not be good.	Motivation and stimulation will be important as well usefulness of the material.
(Indirect relevance)		
As source for learning situation		
	– direct access to subject under study i.e. the school and children.	Student can apply knowledge directly and can use school as an example for assignment etc., hence teaching should include such opportunities. Text must be careful to be relevant to all areas especially with such things as agriculture.
	– no libraries, but school will have textbook and some reading books.	Set reading from textbooks (which student will be teaching from) can be given, with appropriate activities.
Location	– will not be near any centre which can be used as a study centre for more than 4 or 5 students. Contact with other students limited. Head teacher of school can support.	Student will only be able to discuss with other teacher(s) and head teacher. The latter will not have deep knowledge of course. Thus material must be highly illustrated and contain a lot of redundant explanation. Any 'tutor' contact will be via correspondence but with slow turn round. Give student activities which can be done with other staff of school–some form of discussion.
Ease of contact	– only by post with slow turn round.	As above.

Support from family	– student should get encouragement from family–because earning and they will all help him to be isolated and perhaps free of household tasks.	Can assume time not teaching is available for study.
Study condition: student skill		
Style of study	– slow reading–each word. No skipping, skimming or selection. Linear reading perhaps several times. Unable to take notes. Will do everything instructed to do without any personal initiative.	Clear instructions as to how to study the text with advice throughout like: "now re-read section 1"; "before you start read the summary". Clear indication of things to remember key concepts concise summaries. Do not make idle suggestions like "if you have time . . .", they will almost certainly try and do everything and perhaps give up in the attempt.
Entrance knowledge	– will have only basic knowledge of school subjects.	Revise primary leaving certificate material–probably extensively–before going further or dealing with teaching method. Give students lesson plans for teaching.
Maturity	– immature and dependent. Unlikely to be able to organize study.	As above clear instructions on what to study and how. Perhaps an introductory booklet on 'how to study'.
Variability between students	– they are likely to be homogeneous.	Alternative study patterns need not be incorporated.
Study condition: psychological		
Motivation and student objectives	– since aspirations are being fulfilled should be motivated, also success will ensure future employment. Student will want to be able to use material to survive in the classroom each day.	Course material will be followed by student fairly thoroughly but they will place great emphasis on assessment, so use it to increase affectiveness of learning. Make it relevant to student's likely work and this may imply a flexibility about student usage so that he can study each of the school subjects independently as he needs to teach them.
Attitude to assessment		As commented above
Attitude to learning modes	– will not expect new modes e.g. games or even practical work.	Do not try to be too innovatory or if necessary gradually introduce new ideas. The purpose of student activities will have to be explained and pains taken to help students through them.

Confidence	– Student probably feels slightly inferior because was unable to get employment (as opposed to working on family land) on leaving school.	Do not 'talk down' to the student and always build up his confidence. Start with easy activities. Try to give the student clear indications of what he has achieved–say by matching activities to objectives which are clear and comprehensible to the student.

It should be possible to write a brief description of both the style of presentation of the material and the student. For the example above the following would be appropriate:

> The students are highly dependent learners who will work quite hard when specifically directed. However they are unlikely to take any initiative. They will have no access to other material and the correspondence material will have to be completely self-contained, perhaps not even requiring additional paper.
>
> The material ought to be highly structured and didactic with precise instructions on what the student should read and do. The text should contain lots of examples and illustrations. It should be designed to be studied in a linear fashion carefully reinforcing each point and checking the student knowledge. There should be few open-ended activities and answers should be given after each. The answers will have to be prescriptive, and unless essential not contain any hedging e.g. "the answer might be this . . . or it might be that . ." In fact the text will resemble a programmed text, although without it being quite so didactic.

Re-read the above description and see if there are any points which you feel do not match with the information in this section

Comment

All of the description is a matter of opinion and yours might be quite different from other peoples. The description above says that the student will have no access to other material and that the correspondence material should be entirely self-contained. This does not match the information earlier in this section where it says that students will be able to, and in fact need to consult school textbooks. However it will be essential to check that all students have such access, because there will be some variation in the distribution of books.

Activities

These are based on the exercise carried out in Example 1.

Activity 1 (individual activity)

Consider the course you are most closely associated with. Write down for each of the areas–study environment, study condition: student skill, study condition: psychological–the major features which will affect the way you construct your correspondence material, say briefly what the effect would be on the design of your material for each of the three areas.

You might find it useful to simply list variables as they come to you and then group them later; otherwise simply go through the check-list again and Example 2.

If you find it convenient, display your work in a tabular form as in Example 1.

Spend about ½ hour on this activity.

Comments : Discuss your answer with others in your group to compare your attempts.

Activity 2 : (group activity)

Create a combined list of variables and their effects on the design of material

---

Activity 3 : (individual activity)

Write a brief for a consultant author of your course who has not been party to the discussions on student profile. This brief should contain a paragraph on the student and an outline of what the material should look like.

PHILIPPINES

Topic : Writing module for distance learning

Original source : Adapted from Baldo, Trinidad and Orlina, Esperania M. *Module Writing for Distance Learning* in first National Seminar Workshop on Curriculum Writing for Distance Learning, Manila, Ministry of Education and Culture,Office for Non-formal Education, Annex I. pp. 1-14.

Introduction

The novelty of the use of different media in teaching demands a brief guide to curriculum writers on the advantages, disadvantages and the unique features of each mode. Face-to-face interaction of the traditional methods has features which print media or radio or television do not have. But these audio-visual media have their own advantages. The personal touch of the teacher can never be replaced by sounds, sights or print. However, from the viewpoint of mass education the teacher can be very costly. The potentials of radio can also be harnessed to provide dramatic impact and consequently, sustained interest in learning. Though radio or print media are ephemeral and provide only a one-way process they have potentials for quality teaching.

Since print suffers from lack of immediate feedback, and developmental questioning then care should be observed in the layout, presentation and choice of concepts and objectives and readability. One may start with a provisional outline delineating text and activities. Guidelines should be followed in terms of written exercises and symbols to be used in the text.

Module writing should be done by people with skill since every word in print means a significant burden on costs. Thus, this material may be used for national training of distance educators. The original material has been reported in the form of brief notes. It has however, been supplemented with some examples taken from other sources.

Writing Module for Distance Learning

Distance teaching—any channel of communication which enables systematic learning to take place where teachers and students are mostly at a distance from each other in time or space.

Materials used in distance teaching

Media	Printed materials
radio	study kits
TV/film	books
tapes	correspondence courses
	modules

Advantages of distance teaching

1. Vast numbers of students are reached;
2. Problems related to limited teaching resources and staff/facilities are overcome in relation to the following:
   a) distance/isolation (e.g., students can study at far off places while being at their own residences and places of work);
   b) poor transportation, (e.g., instead of students coming to the campus the distance education centres reach the students. Previously inaccessible islands are now being reached by radio and TV); and
   c) lack of economic resources, (e.g., Government save in terms of school/college buildings while students save on transportation and can also afford to earn while studying).
3. Immediacy of learning. (Taking for instance, need based course can be centrally planned and quickly developed to meet emergencies); and
4. Multiplication of the best, (e.g., a single good teacher can teach thousands of students through radio or TV).

Considerations affecting choice of media

1. Theoretical—which does what best?
2. Financial—which costs how much and what can we afford?
3. Availability—what media exist already and what do our prospective students have access to?
4. Pragmatic—what can we use/develop using existing resources supplementing where we need to and can afford to achieving the best?

Various modes of interactives: their advantages and disadvantages

Face-to-Face

Advantages	Disadvantages
1. Remedial provisions	1. Limited resources
2. Breaks isolation	2. Dependent personality
3. Two-way communication	3. Needs support
4. Personal touch	4. Teacher isolation
5. Personal interaction	5. Communication barriers
	6. Lack of authority
	7. Cost

Print

Advantages	Disadvantages
1. Greater reproduction possibilities	1. Presupposes literacy
2. Permanent can be referred to	2. Not dramatic
3. Can be carried around	3. Impersonal
	4. Distribution problems
	5. Difficulty in comprehension

Radio

Advantages	Disadvantages
1. Can reach vast numbers	1. Ephemeral
2. Human–'real'	2. One-way process
3. Stimulates and sustains interest	3. Can't teach everything
4. Dramatic impact	4. Superficial
	5. Non-visual

T.V.

Advantages	Disadvantages
1. Can reach vast numbers	1. Ephemeral
2. Audio-visual	2. One-way process
3. Human–'real'	3. Can't teach everything
4. Stimulates and sustains interest	4. Superficial
5. Dramatic impact	5. Cost–10 times as much as radio

Comparing two interactive modes of teaching

Face-to-Face	vs.	Module
1. Personal interaction		1. Impersonal
2. Personal touch		2. Teacher isolation
3. Two-way communication		3. Communication barriers*
4. Breaks isolation		4. Lack of authority
5. Remedial provision		5. Not applicable to all situations

* The out-of-school learner

– 'concrete' learner

– less technical terms (glossary of terms in the context of their home situations);

– related to current everyday situations and issues;

– 'enrichment' activities

Desirable qualities of a good module

1. Subject matter

   a) Is the subject matter at an appropriate level of difficulty?
   b) Is the choice of subject matter appropriate?
   c) Does it build on students' existing knowledge?
   d) Does it conform with the objectives of the course?

2. Content

   a) Does the material move from simple to difficult?
   b) Are the objectives stated?
   c) Is there a content list?
   d) Are new/difficult words defined?
   e) Is it broken up into manageable sections?
   f) Are answers provided?

g) Are examples given?
h) Are there an appropriate number of assignments?

3. **Teaching methods**

a) Are there sufficient and varied activities?
b) Is there continuity and relationship between units?
c) Are the demands realistic for the students?
d) Is it too long? Too short?
e) Are the activities meaningful for students?

4. **Layout and presentation**

a) Is the language the right level?
b) Is it clear and interesting?
c) Is the style appropriate?
d) Are there adequate and clear illustrations?
e) Are they appropriately placed?
f) Are they appropriate given the learner's cultural background?
g) Is print style and page layout suitable and attractive?

Writing a provisional outline of the lesson

1. Get a large sheet of paper and write 'text' on the top left-hand side and 'activity' on the top right-hand side.
2. Under 'text' list in a few words the main items to be covered in the lesson.
3. Leave plenty of space between each item so that you can change the order or add extra topics as you continue to plan your lesson.

A simple provisional outline on nutrition. (Hints for building learning activities based on the text outline shown on the left).

Text	Hints for building learning activities
– division of common foods into three main groups	Questions to ask:
– body-building foods/proteins their importance	– What types of activities do you need to provide?
consequences of deficiency	– Are they appropriate to learners and subject matters?
– energy foods/carbohydrates their importance	– Are the activities enough? Too few? Too many?
consequences of deficiency and excess	– Do the activities help the learner progress toward their goal?
– protective foods/vitamins and minerals	
their importance consequences of deficiency.	

Written exercises may be in the form of:

1. Copying or writing from memory, the teaching point which has just been made.
2. Answering questions which involve extending what has just been learned to other items in the same category e.g. practising verb formation or an arithmetical process.
3. Applying what has just been learned to a new situation e.g. making comparisons between one period in history and another; applying a bookkeeping procedure to an imaginary account.
4. Applying what has just been learned to one's own situation or experience e.g. Can you think of any more examples of . . . . .?
5. Answering questions designed to test comprehension e.g. exercises in understanding and using words and ideas.

The use of pictures

Pictures can serve several purposes:

1. They can explain something which would be difficult to describe as clearly in words alone.
2. They can be presented as evidence to support a statement which readers might find unconvincing.
3. They can reinforce a written message by making it seem more concrete.
4. They can be used as cues to help people through the various activities in the text.
5. They can remind learners of messages already assimilated.
6. They can form the basis of learning activities.
7. They add variety and interest to a text.

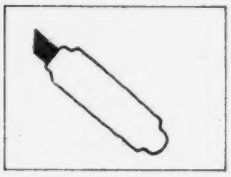
'Reading' a picture means that a person:

- understands what the picture represents
- understands the message
- accepts the message as relevant.

Symbols used in the text

Supplement

This symbol refers you to the supplements printed at the end of the material if you want to know more about a particular topic.

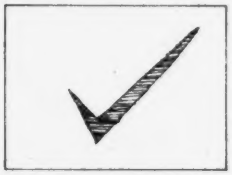


Writing

This indicates a specific writing activity which you should complete.

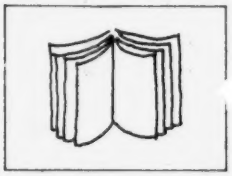
Question

This is used when you want to stop for a moment and think about a particular point. It also refers to questions you should ask yourself before beginning a written exercise.



Checking

This is used when we want you to check through something.



Sample

This is used when we want you to look at the samples booklet.

Guidelines for readability:

1. Are paragraphs short and orderly?
2. What is the average number of words per sentence?
3. How many words contain more than two syllables?
4. Have you used any words which readers may not fully understand?
5. How many times have you used a verbal phrase?
6. How many verbs are there per sentence on the average?
7. How many passive verbs are there?

Sub topics Task/operations	Concepts	Cognitive	Psychomotor	Affective
	All persons need protein in varying amounts throughout life.			Be aware of problem of protein malnutrition.
1. *Kwashiorkor* – Its meaning	*Kwashiorkor* is a form of protein malnutrition.	1. Define the term *Kwashiorkor*		Support local and national nutrition programmes of the government.
2. Age groups most vulnerable to *Kwashiorkor*	Infants and pre-schools are the age groups most vulnerable to *Kwashiorkor.*	2. Identify two age groups most vulnerable to *Kwashiorkor.*		Get actively involved in programmes on the prevention and control of malnutrition particularly *Kwashiorkor.*
3. Feeding practices related to *Kwashiorkor.*	There are common feeding practices among infants and pre-schoolers which contribute to *Kwashiorkor.*	3. Explain the relationship between *Kwashiorkor* and at least five common feeding practices among infants and pre-schoolers.		
4. Signs of *Kwashiorkor*	There are some common and observable signs of *Kwashiorkor* in infants and pre-schoolers.	4. Describe at least five common and observable signs of *Kwashiorkor* in infants and pre-schoolers.		Help disseminate information on *Kwashiorkor* in one's *barangay* (village) and community.
5. Check-list for screening *Kwashiorkor* cases.	A check-list for screening *Kwashiorkor* cases can be used as a guide using common and observable signs of *Kwashiorkor.*	5. Prepare a check-list of at least five common and observable signs of *Kwashiorkor* in infants and pre-schoolers which can be used as a guide for screening *Kwashiorkor* cases in the community.		

Points for consideration

1. Entry behaviour/prerequisite skills;
2. Pre-test/post-test–scope, nature;
3. Objectives–behavioural, adequacy;
4. Content–concepts, sub-concepts;
5. Strategy of instruction/learning activities–*warm, personal, varied;*
6. Language–difficulty/readability level;
7. Evaluation–formative/progress checks feedback;
8. Teacher's guide–technical information, additional readings/references, how to use the modules.

SECTION 2

SUPPORT SERVICE

INDONESIA

Topic : Tutorial system

Original source : *Adapted from the Introductory Tutoring Workshop, organized by P3DK, Departemen Pendidikan Dan Kebudayaan, Indonesia, 1982

Introduction

The role and functions of tutors for helping the students to learn from their materials are specifically dealt with in this paper. The paper further suggests some ways of organizing tutorials, and guidelines for developing a tutorial manual. The effect of tutorial support in distance learning partly reflects itself in the form of mutual student/teacher dialogue and the nature of correspondence that takes place between them. Hopefully by reading this paper some basic principles would be provided in the light of which examples of correspondence given in the subsequent material, i.e. 'Examples of tutorial practices' are examined.

TUTORIAL SYSTEM

(Using the learning materials, counselling and face-to-face tutorials)

A. Using the learning materials

In distance learning, the learning materials not only provide information (content) but also carry out many of the roles of the teacher in the conventional face-to-face situations. The materials usually include:

- the objectives of the study explaining what the student can expect to learn;
- self-assessment questions to enable the student to check to what extent he has mastered the objectives;
- a discussion of the answers to these questions;
- assignments to be sent to the tutor for marking;
- study guidance;
- an attempt to keep the student's interest – lively and clear style of presentation and relating new concepts to the student's own experience.

They do *not*, however, replace the teacher. In fact in many ways the tutor becomes more central.

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Tutor's role

1. The following aspects are important:

   a) the tutor must have confidence in the materials and the methods of learning the materials;

   b) he must have some discussion with the student on how the materials are structured and how he may use them;

   c) interpreting the materials;

   d) individualizing the materials.

   The tutor can carry out these tasks either:

   e) in tutorials; or

   f) by making comments on the student's written work.

2. The following may supplement the written text where necessary:

   a) preparing a study guide;

   b) preparing personalized circulars to be sent at certain points in the course (e.g. where student usually experiences difficulties);

   c) offering remedial help;

   d) offering enrichment materials for the more able students;

   e) providing extra examples;

   f) using a textbook to 'fill out' parts of the materials;

   g) drawing up advice sheets on possible short-cuts or alternative routes through the materials;

   h) linking the materials to local resources;

   i) linking the materials to current TV or radio series; and

   j) preparing regular or occasional newsletters.

All of these take *time* and the tutor has to decide on priorities between extra materials and the written comments on assignments.

3. The skills required of the tutor in using the materials:

   a) attitude, preparedness to support the learning materials;

   b) an expert, detailed knowledge of the subject-matter of the course;

   c) a similar detailed knowledge of the materials themselves – their objectives philosophy, structure, strengths and weaknesses;

   d) preparedness to adapt or add to the materials without destroying the student's faith in them; knowing when it is worth the effort to prepare extra materials;

   e) the ability to understand and relate the three perspectives – the student's, the tutor's and the course writer's;

   f) an awareness of the student's learning difficulties (counselling skills);

   g) knowing the aims and objectives of any other components of the course (e.g. practical work).

B. The counselling role of the tutor

Counselling can be defined as 'the advice, help and support' given to students so as to enable them to make satisfactory progress in the system.

1. The student's problems which might make this 'advice, help and support' necessary include:
   a) lack of confidence which regular contacts with other students and teaching staff would bring;
   b) personal and home difficulties;
   c) deciding on priorities of how to divide time between normal workload, studying and family life;
   d) preconceptions/prejudices about what 'learning' is and the ways one should learn;
   e) anxiety about 'returning to learning' as a mature student;
   f) lack of incentive and 'yardsticks' from regular classwork and contact with peers.

2. These problems show how close 'counselling' is to 'tutoring' and it is pointless to try to draw a clear distinction between them. The following points are important:
   a) the availability of tutor when needed;
   b) occasional contact initiated by tutor;
   c) reassurance and support;
   d) personal interest in the students;
   e) attention to the student's own personal objectives;
   f) flexibility (sometimes giving advice, sometimes 'just' listening);
   g) awareness of the expectations the student brings to the course;
   h) encouraging the students to contact one another;
   i) discussing and explaining course requirements;
   j) giving the student full feedback;
   k) referral, where necessary, to other sources of help.

3. The various stages when the students may need help:
   a) the stage prior to enrolling;
   b) entry to course/first tutorial:
      i) the student may be alarmed by the amount of work he seems to be involved in. The tutor can reassure him and suggest ways of dividing his available time;
      ii) the student may be apprehensive about meeting the tutor. The tutor must 'give time' to the student at the first meeting and he must show his genuine personal concern in him;

iii) The student may be apprehensive about meeting other students. The tutor should greet the student warmly, introduce him to other students and involve him in the proceedings in a non-threatening manner.

c) the first assignment;

– the student may be worried about the style of presentation, the expected level and the written expression. This is a point at which some students drop out. The tutor can offer help or run a tutorial which amplifies the requirements of the assignment. Also, note the points under 'Assignment comments' after the assignment.

d) 'mid-course blues';

– the student may find it difficult to keep going because:

i) he may be lagging behind – the tutor can suggest short-cuts;

ii) he may be drifting – the tutor can agree on new deadlines of assignment with the students;

iii) he may be bored – the tutor can remind the student of the achievements, or suggest ways of breaking the course into periods of intensive activity and rest. He can suggest ways of using family and friends as motivation.

e) the examination;

– the student may be afraid of failure or find the process of revision unmanageable. The tutor can refer to earlier tests, suggest ways of organizing revision and discuss examination strategies.

C. Face-to-face tutorials

There are many advantages in bringing the students together as a group. The advantages are:

– to establish personal links between student and tutor and student with students;

– to increase motivation, giving the students a psychological 'boost' by sharing problems and experiences;

– to provide opportunities for activities not possible at a distance – discussions, games, simulations, films, and practical work;

– to provide a base from which students can set up self-help groups;

– to augment the academic material and give the student a chance to discuss the problems of distance learning;

– to clear up queries, offer help, encourage self-criticism.

A number of ways of organizing the tutorial are possible, i.e.:

– individual tutorials;

– small group tutorials of two or three students;

– the students working on problems or questions in small groups while the tutor circulates;

– large group discussion on topics such as general study problems, how to organize work, a new topic or the students' own experiences, problems.

D. Group tutorials

1. Preparation before tutorial:

There are a number of possibilities, i.e.:

a) ask the students beforehand the topics they would like to discuss and the problems they had encountered;

b) draft a schedule of work to be done by students beforehand. Ask them to suggest specific topics;

c) arrange the room so that interaction is encouraged (e.g. chairs in a circle, etc.)

2. During the tutorial:

– give the students small, specific, manageable tasks. Form pairs to submit arguments. Extend the challenges and make them more open-ended.

3. Ending the tutorial:

a) ask for ideas for the next tutorial and hand out preparatory work;

b) refer to the forthcoming assignments;

c) encourage students to write notes for those who were unable to attend.

E. Guidelines for tutorial manual

The aim of the workshop should be to produce a manual which will be a reference book for all tutors involved in the distance learning course. On the completion of the in-service workshop, the manual should act as a reminder to the tutors of the basic principles of tutoring as outlined in the workshop. It should give some guidance about procedures which will most likely be successful in specific situations.

It is quite difficult to provide a set of 'hard and fast' rules about tutoring because the problems of each individual student can be different.

Hence, it is suggested that the manual should help the tutor to *understand* the problems of both the tutor and the student in distance learning, if possible by illustrating them with local examples and case studies. Once understanding is achieved, the tutor will then be better able to select the most effective course of action from those examples given in the guidelines.

The topic headings covered in the general sessions on tutoring could provide the starting point as chapter headings. In each case, there could be a general discussion of the underlying problems, with a number of local examples, leading to an understanding of those problems. This might lead to a set of recommendations for solving the problems with a rationale which explains the solutions.

A summary of 'key points for the tutor' at the end would be useful. It is suggested that some of the examples used will be specific to different subject areas especially in the sections on 'Using the learning materials' and 'Assignment comments'.

INDONESIA

Topic : Examples of tutorial practices

Original source : *Adapted from the Introductory Tutoring Workshop, organized by P3DK, Departemen Pendidikan Dan Kebubayaan, Indonesia, 1982

Introduction

This is a collection of selected examples of tutorial practices relating to assignment marking and counselling. In distance education, there being no frequent face to face contact between the teacher and the taught, commenting on the assignments and provision of counselling and guidance is very important. Here the main source of individual advice, guidance and constructive criticism for a student is his course tutor. This implies that a tutor new to correspondence teaching needs to be trained for his new role. Telling a student about his shortcomings and errors and at the same time not making him lose confidence, perhaps needs a conscious effort. It is all the more difficult under the distance education system where the greatest part of this activity occurs through an exchange of written words. This collection of correspondence between students and their tutors was randomly selected by Mr. Slamet Sudarman and presented at the meeting.

EXAMPLES OF TUTORIAL PRACTICES

Example 1: Letters from tutors to students

Dear Penny,

Thanks for your letter. Yes, the work you have done covers both chapters (5 and 6) and it was very well written indeed. I really enjoyed reading your arguments . . . .

The standard of your work is high. Whether you will sit for the exams or not, I hope you will keep on working – that is, as you are enjoying it. The hotel industry might have lost you but perhaps some other industry will benefit from your talent.

John

I was a bit puzzled by your definition that a talk is like a lecture . . . I agree with what you have to say about a discussion. It should be open, 'free for all', and it can be ruined (it often is) by it being monopolized by one or two people. A talk is usually an informal speech, generally followed by a question and answer session. A lecture is formal, with no room for questions and lots of note taking while the 'great man' is casting his pearls before the swine!!

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Example 2: Dialogue between tutor and student

I've enjoyed marking this paper very much, Peter. Your list of emotive words is very comprehensive.

Do you think you could: (1) choose three particularly good examples from your list; (2) suggest how we might decide whether a word is being used emotively.

(Tutor : October 1980)

Re the emotive words. I would choose 'long haired layabouts', 'greasy trendies' and 'young hooligans'. As to how we can tell, I think that we can only say, 'is this a reasonable use of the word – i.e. one which most people would agree with – or is the writer smuggling in his prejudice? '

(Student : November 1980)

Are you finding that you are looking at arguments *outside* the course along the lines suggested? And is the course helping you to argue better? I'd really like your reactions to these questions.

(Tutor : December 1980)

I've enjoyed the course a great deal and am much more critical now of what I read and see on television, particularly politicians' speeches. I think more when I offer arguments of my own – except when I get heated up! A slow process but I feel I'm on the right lines now.

(Student at end of course)

Example 3: Assignment comments

The delay before receiving marked work adds to the tension – hence the need for a speedy return. When the script is received, students can quickly take up all the negative comment, interpreting almost everything as a hostile judgement. Thus tone and presentation of the comments are extremely important:

P. BARE PASS. YOU'LL HAVE TO DO BETTER
IF YOU WANT TO *PASS THE EXAM*

is far less encouraging than:

I'm afraid that this time I can only give a 'D'. This is because your working isn't always clear. If you can put this problem (and I suggest how on your script) then you'll pass the exam.

Example 4: This is what some experienced tutors say about the tone of their comments

'I try hard never to be utterly negative: there is usually something one can find to praise before suggesting how other things could have been improved.'

'It is important to establish that the tutor is a friendly, helpful, cheerful HUMAN being who understands the sort of problems which his students encounter . . .'

'Some tutors would probably think that I err too much on stressing the positive. But a lot of adult students have very negative views of their capabilities from school'.

'I never use any form or tone of ridicule, however minor, in marking: never make a student feel small or preach. I am lavish in praise, when deserved, and I usually find something good to say. . . Adults flourish on praise, fully as much as children'.

'When a student has done something really well, don't just tick it, eulogize'.

Example 5: More assignment comments

'In spite of your pessimistic tone in your letter this was a very good experimental effort. You got some positive results – even if you plot all the results on the graph you still see the relationship – well done. You also got some negative results but even those are important as they still gave you information'.

OU science course

Your write-up was chatty and understandable but not in the scientific method. You will have help now with your OU write-up for the moon experiment. Try to separate title, theory, method, result and conclusion, each section is restricted to that particular topic. You had a good basis here but you must practise writing a structured account. This is not as difficult as it seems, so don't despair about it. Handling of experimental ideas was very good indeed so be encouraged by that. I disagree with your letter – you show excellent potential as a scientist but need help in the special way we do our writing-up.

Good luck in the OU.

Essay writing course

'I enjoyed reading your essay about your school days very much indeed. It has many of the ingredients for a successful essay recipe. I liked the small details which you include like the slices of bread pudding which the well-off were able to afford and Miss Blight smelling of iodine. This made your account particularly vivid. I also liked the touches of humour, your comment about the timely outbreak of the war saving you from having your name read out in assembly!

I note that you include your plan as an after-thought. The essay could have been a little better organized – you mention going to your aunt's briefly and then return to it again later. The essay is a little jerky in places – memories do tend to be very scattered but perhaps you could have moved from one subject to the next a little more smoothly. I think your ending is rather abrupt – perhaps you could have concluded by mentioning any regrets you had about your lack of schooling because the War came, though at the time it had its advantages'.

Both examples show how tutors seek to build a common ground with their students, to reinforce and to praise strong points and also to suggest, tactfully, the ways in which work might be improved. Both tutors also communicate pleasure at having read the work; they seem interested in what the students have to say.

Example 6: Assignment marking

Question: a) Do you give grades or marks to the student?

b) What are the advantages and disadvantages of giving grades and marks?

Here are some tutor responses to this question:

'I am not inclined to give grades which, if they are to be of any use in this course, would have to be measured against the yardstick of the final exam. Remarks (comments) are much more useful than marks'.

'I give grades in the later stages, and earlier, if the student asks for them. I keep my own record of grades as a (rough) guide to progress. Fortunately we keep duplicates of our comments and grades (on carbon paper) and this helps enormously to plan the teaching comments on future assignments'.

'I use a profile rather than marks or grades, i.e., I measure students' performance on criteria relevant to the assignment; e.g.

Fullness of treatment:	full		thin
Style:	v. clear	satisfactory	obscure'

'Initially, I comment very fully but I do not grade. Once the student grasps what is required I begin to give grades. Grades appear to be an objective judgement on a student's work. If accurate, they indicate to the student whether he/she is working at the appropriate level'.

'I always mark on strict examination standard, even for those students who do not intend to take the examination. I tell the non-examinees so . . .'

'I feel that awarding grades is a hazardous task. I prefer to take the student's existing level of attainment as the baseline. If in a following piece of work he shows an improvement, he deserves praise, whether or not his achievement reaches the arbitrary level of an external examination system'.

'I explain in the pros and cons. If the student wants me to grade I will then do so'.

'I give just pass/fail – with full comments'.

'Grades give an illusory impression of 'objectivity'. I write full and detailed comments on a student's work. This is one of the most important sources of learning for the student; unfortunately it is also extremely time-consuming'.

Advantages of grading:

- students expect marks and grades and see this as an essential part of the tutor's job
- they give an objective yardstick of progress

Disadvantages of grading:

- difficult in some subjects
- they can be ambiguous; do they measure: (i) the student's progress against his own 'best'; (ii) the student's progress towards course objectives; or (iii) the student's progress compared to that of the other students?
- the student pays more attention to the grade than to the comments
- the student does not have access to the grades of fellow-students.

Detailed explanation of grades (Sample comments)

In general an assignment which was of a high standard.

I gave you full marks on the first question because you covered the social aspects of the Labour Administration very well. You may not get such a high mark in the examination for this answer, because the examiners expect something on (a) post-war reconstruction of industry and finance, (b) the redistribution of wealth. On the other hand, they may award a high mark for such a thorough coverage of the social aspects of the period 1945-51. But it is well worth trying to see the total picture of 1945-51. Also be aware of why the labour government fell from power.

This topic, 1945-51 is well worth revising thoroughly. The course notes are very good.

Question B2 obviously needed more detail.

Your answers are certainly up to the 'O' level standard and I would expect you to achieve at least a 'C'.

Try to make sure, however, that you answer the questions without needing to refer to books or notes.

INDONESIA

Topic : Selecting appropriate media

Original source : * Adapted from the Introductory Tutoring Workshop, organized by P3DK, Departemen Pendidikan Dan Kebudayaan, Indonesia, 1982

Introduction

An attempt was made to summarize the needed information in relation to the selection of media, the characteristics and classification of media, and the evaluation of media in distance learning. This may serve as a useful guide for students interested in using various media. For training purposes, an interesting learning activity could be the identification of different media mixes, in terms of their suitability, for different types of given courses, audiences and locales of study.

SELECTING APPROPRIATE MEDIA

A. Factors affecting selection

1. **Objectives:** At the end of this lesson the student will be able to:
   a) describe or paint/draw what a dinosaur looked like, its environment, food, living habits, visual, still or moving.
   b) explain, dramatize or write about what it was like to live in prehistoric times together with the dinosaur – sound recording.
   c) tie a reef knot – demonstration or having visual.
   d) strip and reassemble a carburettor – real thing or model.

2. **Characteristics of medium**
   a) some media bring experiences into the classroom which are not possible otherwise.
   b) visuals explain relationships between parts, layout, shape, etc.
   c) sound is good for changing attitudes, affecting emotions.
   d) moving visuals are for showing changing relationships, motion, interaction between parts.
   e) moving visuals and sound – all of the above and for changing attitudes.

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3. **Learners preferences**

   Some learners prefer to learn from visual information, some from writer and others from sound – live or recorded.

4. **Teacher preferences**

   a) some teachers prefer to use a particular media such as slide-tape.

   b) they are comfortable and confident with it – may know that it is successful in doing certain things.

   c) may be 'super 8' enthusiast etc.

5. **Practical constraints:** A variety of the following:

   a) Do I have enough of the right equipment?

   b) Is the power supply adequate and is it at the required point?

   c) Can the room be darkened or are there other ways of projection?

   d) Are the appropriate software available?

   e) If not, do I have the right materials, time to make them, equipment and expertise?

   f) Is the medium suitable for the size of the group?

This is an ideal progression if seen only from the objectives but there are practical constraints.

In practice, it often starts with practical constraints first.

B. Classification of media: One possible classification (simple)

- life sound (talk or lecture)
- recorded sound (record or tape, or on cassette)
- still visual (diagram, photograph in text, slide, filmstrip, poster, wall-chart)
- moving visual (film, TV., loop film)
- still visual and sound (slide and lecture, etc., tape slide, tape-filmstrip, tape-picture/photograph)
- moving visual and sound (film, TV)

C. Characteristics of media

1. **Reality, things, models**

   – 3 dimensions – shape, relationship of parts; highly motivating

2. **Non-projected visuals**

   – dimension from realistic, symbolic abstract; visual impressions, size, shape, etc.; diagramatic representation – important feature, interiors, relationship of parts; abstract concept – interrelationship of parts of education system, permanence, reference use, especially if complicated wall-chart.

3. **Projected still visual**

   – more motivating – darkened room, frame round picture, etc.; can do all things of non-projected except permanence

4. **Sound-live**

   – flexible in response to feedback; can be amplified, if necessary; can be highly motivating with right speakers; transient, cannot study it at own pace

   Sound-recorded

   – use of music, sound effects, drama production techniques for motivation, affecting emotions, attitudes, etc.

5. **Still visuals and sound**

   – using two channels – can be more effective if designed and produced well. cheap and flexible; sound can be used to highlight and explain features of visuals; cognitive, affective and psychomotor objectives.

6. **Moving visuals**

   – good for anything to do with motion; also concepts and ideas which change with time; highly motivating and realistic

7. **Moving visuals and sound**

   – most realistic and motivating; problem of pace, introduction and follow-up; all types of objectives (e.g. galloping action of a horse)

D. Selecting media for distance learning

1. What is possible within the constraints? (Availability of equipment to student, production cost, time, etc.)
2. What does combination of objectives and characteristic of media suggest?
3. Do teacher and learner preferences give further guidance?
4. What does cost/benefit analysis suggest? (May not be detailed or highly objective):
   - for the amount of expenditure is the benefit significant
   - are there additional outcomes other than learning, e.g. motivations
   - are there other programmes which could use the equipment/techniques
   - will it improve the teaching methodology, or the general condition of family, etc.

E. Evaluating media in distance learning

- This is not really any different from the procedure already suggested;
- Decide on purpose and strategy;
- The tutor may want information on the learning outcomes, changes in motivation or attitude, unexpected outcomes;
- Observation may be made to see how the media are used, their problems, etc.
- There should be interviews of discussions for motivation and attitude.

SECTION 3

ASSESSMENT AND EVALUATION

PAKISTAN

Topic : An overview of assessment and evaluation

Original source : * Adapted from *Developing Evaluation and Assessment Materials as part of a Distance Learning System*, p. 1-16

Introduction

Distance learning is gaining in importance in the world. There is still, however, a lot to be understood about how it is to be organized. This is particularly true in developing countries where the conditions and clientele pose special problems. The components of the distance learning system—correspondence text, radio and television programmes, experimental kits etc. require special skill in their design and development. Evaluation of these components in terms of their learning impact on students and the assessment of latter's performance in terms of their exposure to the former, naturally become two vital areas to be explored. It is particularly important in a distance learning system because of the large number of students and the intense effort that goes into material production.

The material that follows was an attempt to familiarize the teachers of the Allama Iqbal Open University, a distance teaching institution, with the basic concepts of assessment and evaluation. Besides being otherwise useful the material also offers a good example of the case where training material in the form of self-study lessons is specially developed by an organization while keeping in view its own academic programmes, organizational structure and training needs. In the material, abbreviations of DLS and AIOU refer to Distance Learning System and Allama Iqbal Open University respectively.

AN OVERVIEW OF ASSESSMENT AND EVALUATION

1. Distinction between assessment and evaluation

The use of these terms varies in different parts of the world, so there can only be a distinction made as a matter of convenience. In this way confusions will be prevented, and particularly in this handbook, you will have a clear idea of what is being discussed.

Assessment

Assessment is an attempt to learn about the strengths and weakness of the knowledge and skills of the *student*.

Evaluation

Evaluation is an attempt to find out the strengths and weakness of a *course*.

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* Reproduced with permission of Vice-Chancellor, Allama Iqbal Open University, Islamabad, Pakistan.

So, you assess students and evaluate courses. Naturally the distinction is artificial and there are overlaps, for example, if you find out from assessing students that they have all failed to understand a certain idea then you may question the quality of your teaching. In other words the assessment is telling you something about the evaluation of the course.

2. The role of assessment

As said in the introduction, assessment in a DLS is much the same as in any learning system although, as will be noted below, certain aspects become more important in the 'distance' situation. There are two basic and inseparable functions of assessment: to test competency achievement or skills; to aid learning. The first of these is generally seen as the primary function of assessment, and in the case of final examinations this is usually the only function they fulfil.

Assessment and learning

. . . opportunity to use knowledge or skills

It is often difficult to be sure you can do or understand something until you have tried some form of exercise. Sophisticated learners (like you!) do not necessarily have to be set tasks by someone else to ensure they have learnt a skill or piece of knowledge. However, for a student (whether he is an adult or an adolescent) there are great benefits from being able to try a question or task which requires the student to use the knowledge or skill he is learning. At its simplest, if you are trying to learn to ride a bicycle and someone explains the theory then how much you have learnt can be tasted by trying it out.

Question 1

Did you notice a complication in that example of learning to ride a bicycle?

Comment

There are actually two aspects to the learning in this example: the first is learning the theory—about where to put your hands and feet, to keep upright etc. the second is putting the theory into practice, getting your body to do the things you learnt in theory, e.g. keep your balance.

. . . feedback to aid learning

This opportunity, for the student to use the knowledge learnt, becomes really effective as a learning device when feedback is obtained. So if a student attempts a question and it is marked or he is shown a model answer then he can see where he has gone wrong etc. This is a learning experience. The feedback after doing the task can be provided by an outsider, e.g. a teacher, who comments on the work of the student in a way which should help him learn. Alternatively the student can be given a model answer and he makes his own assessment—self-assessment.

There is a third way which assessment can aid learning and this is by helping to structure and organize the student's study. This is

. . . a form of pacing for student's study

especially true when assessment occurs at regular intervals during a course. It gives him targets to work for, focuses his attention on certain parts of a course and in a sense forces him to organize his work. For some students this may be counter-productive either because the pace may not suit them or because it becomes a burden rather than an aid to learning.

Relevance to DLS

The above aspects apply to assessment in any educational setting, so what is the relevance of them for a DLS? The important thing to remember is that often, though not always, the student is an *isolated learner*. This means that for example he needs opportunities for trying his knowledge because he may not be able to even discuss the course with other students; feedback has to be deliberately planned and this can be done through assessment (including self-assessment). The isolation also makes the pacing element of assessment particularly important as the student chooses when and what he should learn (obviously radio, TV., and tutorials or group meetings also provide a form of pacing, but these are often optional elements in a course).

. . . help the isolated learner

Assessment and testing

This is the more familiar role for assessment. It's most usual form is the public examinations and hence qualifications. The assessment is thus primarily for those outside the educational institution. Usually the assessment is of a general kind and is knowledge-based with no particular skills or competencies implied in successfully passing it. In other cases, e.g. craftsmen, doctors, nurses etc. the assessment entails demonstrating the ability to perform certain tasks. There is no doubt that because these assessments are linked to employment prospects they are the most important and it is the effect of these which most strongly affects any educational institution leading students to these examinations.

. . . for outsiders e.g. employers

Within the educational institution assessment of a student can tell a teacher if the student is ready to progress from one course to another or indeed start any course. This is a form of diagnosis. Unfortunately it is one rarely used properly; more often than not it is applied in an 'all or nothing' fashion: if you fail you cannot progress, if you pass you can. Little is done to help support students in the weak areas which show up in assessment. Diagnosis can be seen as both a teaching and learning function, and as evaluation of a course.

. . . for diagnosis

Finally there can be no doubt that students themselves get, a great deal of satisfaction from knowing how well (or otherwise) they did! In a sense this is related to the idea of feedback mentioned above, but it is a different aspect. Many teachers must have been dismayed, when, after giving back to a student an assessed piece of work which they had carefully commented on to help the student, they find that he turns to where the grade is, looks at it, grunts and stuffs the script in his bag. Perhaps this 'satisfaction' comes from the competitiveness of society, or from the individuals psychology—concerned about his self-image.

. . . for student satisfaction

Relevance to DLS

There is nothing special about these functions in regard to a DLS, since it is likely to be fulfilling similar roles as other types of educational institutions. It's uniqueness is more likely to come out because it wants to put on courses which have no identifiable assessment of use, or interest, to outside bodies. For example a course on vegetable growing is unlikely to want to assess students to award some qualification, however there would be a place for assessment in such a course.

Activity 1: Examining the testing roles for assessment of AIOU courses

Take the three areas of the AIOU's programme: Teacher education; Functional courses; General education; and examine the testing roles of assessment.

Activity 2: Examining the learning roles of assessment

The AIOU plans to run courses where group study will be important. For example there may be a health course for rural women who study together with the help of a group leader (who may not be highly trained). The aim of the course is to improve the health practices of rural women. What learning roles are there for assessment in this course, and what kinds of assessment (in general terms) would you think are required?

Comment on Activity 1

Each of the roles will be considered (for outsiders, for diagnosis and for student satisfaction) in turn, in relation to the three programmes:

For outsiders:

i) Teacher education: The Employing Education Department will want to know how a teacher has done in studying an in-service course, as an indication of his professional development, to award another increment, to offer a new job or promotion.

One of the features of the AIOU's Primary Teachers Orientation Course has been the lack of recognition of the course in one of the ways noted above. This has had an obvious effect on the motivation of the teachers taking the course – an example of the overlap of testing and learning roles of assessment.

ii) Functional education: It is difficult to generalize since the nature of these courses is diverse. For courses which related to functionaries in nation building departments, e.g. agriculture extension workers, the testing roles for outsiders will be the same as for the teacher education programme. Other courses, for farmers for example, would

have little need of assessment for outsiders. The farmer would be interested in his increased production. (In this example the major role for assessment is for learning – so that the farmer becomes skilled and can increase production)

iii) General education: This will be the same as for any school or college. The assessment provides the student with a qualification which enables him to seek employment.

For diagnosis:

All of programmes will have one aspect in common with regard to this role. Because the AIOU is a DLS with a tutor or group leader being used to support individual students, the tutors and leaders will need to know where the students' weak points are and thus help them. Remember that in the case of DLS materials (print, radio and television) they are designed with a mass audience in mind and it is the face-to-face element (however it is organized) and the continuous assessment which provide the individualization.

In the case of the Functional Courses with a definite skills component it is obvious that progression from one skill to a higher level one will be dependent on the *mastery* of the lower level skill. (It is not enough to be able to assemble a gearbox with a success of 60%). To progress from one level to another in the General Education Programme requires the diagnosis element of testing–one which is familiar to all teachers.

For student satisfaction:

This is likely to be most important for adult learners who had little contact with education either at all, or in the recent past. The role of testing can be to build up their confidence (if they are successful) and hence give them a more accurate self-image with regard to study. This may be particularly important in the functional programme aimed at the rural population.

Comment on Activity 2

Learning roles

The two main ones would be the opportunity to try out the ideas being learnt in the course in a controlled situation (i.e. not with their own families) and to get feedback. As the group leader is unlikely to be well trained the assessment may be carried out by someone else. Thus structured activities will be necessary to provide the opportunity and the feedback. After these activities the mothers can try them out in their homes.

Kinds of assessment

Without anticipating later parts of the handbook it can be said that this kind of student (a rural mother) is likely to need practical kinds of assignments. But it is also true that there are unlikely to be the resources to adequately assess these, especially with a group leader who will not be trained sufficiently to do it. Two things could be done: the group could attempt a practical exercise and then a radio or television programme could go through the same exercise to provide the feedback–the assessment in this case is self-assessment; the group could also try the exercise and through the group leader discuss and note down the difficulties etc. they encountered. This could be submitted in a written form to some centralized correspondence tutor who is qualified to do this.

3. The role of evaluation

a) Introduction

Evaluation theory contains many debates about the extent and nature of evaluation. In this handbook we will take a more pragmatic view; partly because of the aims of the handbook, and partly because much of the theory is unhelpful to practitioners. Here we will consider two major aspects: course evaluation designed to improve courses–at the different stages of their production and presentation; evaluation of courses or components of the *teaching system* designed to aid the institution in its decision making.

These considerations leave out a whole lot of activities designed to improve the system, for example studies of the nature of the student population or of their facilities for learning at home.

b) Evaluation and the improvement of courses

There are three stages at which this can be important: during the production phase; when the course is in operation; and when the course is ready to be remade or replaced.

Evaluation and course production

. . . through course team discussions

In preparing a course for a DLS it is especially important to get it right, because a considerable amount of resources are committed to it–copies of printed material to last several years, radio and television programmes etc. This kind of evaluation is usually called *formative* evaluation. There are various ways this can be done and three will be discussed here.

Firstly there are course team discussions. Those involved in writing the course will be reading, watching and listening to each others work and giving opinions on it. Their opinions will be those of experienced educators. The important thing about this kind of evaluation is that it is intimately tied up with the process of revision: material is read or seen by the course team, comments are made in a meeting and perhaps in writing, the writer or programme producer revises the material, it is discussed and commented on again, revised again, and so on, until the team is satisfied with it.

. . . through outside experts

In a similar way comments can be made by outsiders not involved in producing the course. They evaluate it as experienced educators, but can bring fresh opinions 'uncontaminated' by the course teams.

. . . through developmental testing

Finally, and perhaps a more familiar form of evaluation, is developmental testing. This is where the material, before it reaches it's final form, is tested out on a group of students. Their comments and attempts at activities and assignments are used as the basis for changes which are made before the final versions are made. The advantage with this method is that it exposes the material to students rather than just experts.

Evaluation and course maintenance

Once a course has been produced, i.e. material printed and recorded etc., there is usually very little room for change. Special supplementary material can be added, perhaps radio programmes re-recorded and new assignments and examinations produced.

. . . collecting feedback

These limited changes have to be borne in mind when evaluating at this stage. In fact it is usually better to talk of feedback.

. . . routinely

This feedback simply monitors the course and shows where there are major problems. This feedback can be collected on a routine basis: through statistics already collected by the DLS, e.g. the number submitting assignments, study centre attendance, numbers attending community viewing etc., by standard questionnaires which ask about the viewing and listening patterns of students, their workload, the interest and difficulty of the material.

. . . non-routinely

On the other hand the feedback can be especially designed to check on areas which were identified as problematic in the production phase or indeed in the developmental testing. For example a simple population game used to illustrate the effect of family size may need special investigation because it was not ready at developmental testing. This would entail observing groups playing this game, talking to the students and tutors about the difficulties and perhaps even a special test to see what the students have learnt. (Routine data may also be utilized if appropriate).

Evaluation and course remake

When a course has been running for a few years (it is normal in a DLS to continue a course substantially unchanged for a few years to off-set the large investment). Some thought will be given to remaking the course or even replacing it. If the feedback during the course has been positive then perhaps the course will be remade without major structural changes, e.g. only a few booklets rewritten and a few TV programmes remade. If the feedback has been negative then a total remake could be contemplated. In either case a special evaluation may have to be mounted: in the former case it may concentrate on certain aspects (as with maintenance); in the latter case

a large scale investigation may be carried out to find out what the major problems are (the feedback may only hint at them). In both situations a special investigation will be combined with the feedback collected during maintenance.

. . . remade in new form

However often effort is wasted in such evaluations, because, for other reasons (i.e. ones not connected with quality of the teaching material) the course will be remade in another form. Such reasons could be that there have been major discoveries in the subject area (more likely to be intellectual fashions), a different team of people are assembled with different skills, or just that the original team would like a change. Whatever the reason it is obvious that feedback on the previous course is likely to be of little use. Instead an 'evaluation' might be concerned with asking students and tutors how they would react to new subject matter or contents. Indeed there may be no need to evaluate the previous course at all.

. . . replaced

This brings us on to the last in the remake situation, when in fact the course is not remade but replaced with a completely different one. Again the evaluation necessary is of quite a different nature. Here it must address the criteria of the decision makers who will say 'this course must be terminated and replaced by that one'. The decision options will need investigating and information collected on them. A simple aspect of this may be in terms of student numbers, the old course may have decreasing numbers and hence the evaluation must find out why. Here you don't ask the students who studied the course, but those who chose not to. You might then go on to find what kind of course would attract large numbers. Naturally there may be criteria other than student numbers that you consider. This kind of investigation will not be dealt with in this handbook.

c) Evaluating of the components of the teaching system

Here, as noted in the introduction, we are not concerned with all aspects of the teaching system, but those which relate to the components of courses. For example, television uses a lot of resources in a DLS and it is necessary to evaluate what kinds of programmes are successful and in what ways. Other areas could be looking at tutorial work and assessment but the important fact to bear in mind is that none of these components can be seen in isolation from the system they are part of, i.e. the course. For example to evaluate, say, the use of television for demonstrating experiments, can only be done when, for each programme, the other components (correspondence texts, radio programmes or experimental kits) are also subjects of the evaluation.

The nature of this kind of work is often on-going whereas evaluation is usually short-term. In this case it often becomes the subject of research.

NEW ZEALAND

Topic : Assessment and evaluation

Original source : * The Correspondence School, Department of Education, New Zealand: Duties of heads of departments within the correspondence school

Introduction

This material is an extraction from a paper submitted by the New Zealand Correspondence School to APEID in response to a request from ACEID for systems materials on training teachers in distance education for the APEID Seminar on Further Training of National Officials and Specialists in Distance Learning in Islamabad, 8-12 August 1983. First part of this material provides a rationals for course evaluation and after discussing various types of evaluations focusses on assessment. Besides presenting a theoretical model of a systems approach to teaching and learning with the aim to help teachers evaluate the impact of their inputs it states a variety of measurement scales which can be used. In its second part methods are discussed while in the third various uses of assessment and evaluation are discussed in detail. In its last part a summary is added. This material in parts, or as a whole can serve as useful background material before the start of a training workshop or even during training sessions as a reference material.

ASSESSMENT AND EVALUATION

Assessment and evaluation I : Types and functions

1. Why evaluate?

a) Feedback : to pupils, parents, teachers and curriculum developers. We need to know how effective our teaching is.

What are the pupils supposed to learn?

Are they learning it?

How can we tell?

b) Decision making : i) Educational: why use these methods and resources?

ii) Economic and administrative:

Is it cheaper?

Is it easier?

Do the benefits justify the costs?

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* Reproduced with permission of Mr. Ormond Tate, the Correspondence School, Department of Education, New Zealand.

c) Accountability : Are we achieving what parents, students, society, the Department expect of us?

d) Specific data : Evaluation helps to bring clarity to fuzzy thinking.

Teaching is not just exposing pupils to something 'because it does them good' or so that 'each pupil will respond in his or her own way'.

2. Types of evaluation

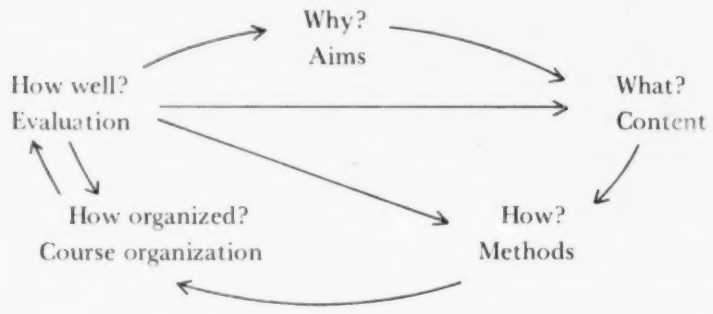
a) Individual achievement:

i) Summative evaluation occurs at the end of a course or unit, and involves looking back over completed programmes, e.g. school report, School Certificate or University Entrance Examinations.

ii) Formative evaluation provides information so that decisions can be made on the next teaching/learning actions, i.e. about resources and methods that can be modified, adapted or changed.

b) Curriculum suitability:

This includes pupil assessment but is group oriented. A classical curriculum process is shown, and illustrates the importance of evaluation, and the aspects it is designed to provide information about



3. Types of assessment

a) Normative assessment compares pupils, awarding grades based on a normal distribution. The 1 to 5 assessments on E19/22 cards* are normative, and so are School Certificate examination results. Normative assessments do not indicate any standard of achievement.

b) Criterion referenced assessment measures how well a pupil learns a subject. This is done by testing to see if a pupil can achieve a predetermined standard or criterion. Pupils are measured against each learning task, not against each other.

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* An E19/22 card records a child's progress throughout his school career.

4. Objectives

Evaluation is about what it is hoped the pupil will achieve, i.e. a comparison of actual performance with an ideal.

a) Objectives must be stated clearly – not vague guff.

b) The pupil is the subject of the verb – What will he or she do?

c) There is some observable action – something specific.

d) Positive: objectives concentrate on what a pupil will do, *not* what he or she can't do.

e) The emphasis is on pupil learning, not on what a teacher will teach.

f) Objectives emphasize pupil activity and abilities he or she will demonstrate, not just content.

g) Objectives lead to methods of assessment

h) Objectives can be established from current teaching practice; your favourite lesson, or something you just 'know is good for pupils', by asking Why? Why? Why?

Some concerns and difficulties are:

a) Objectives can concentrate on trivial and low level learning.

b) If taken to extremes long lists of objectives can be written. This can be overcome by combining detailed or over-specific objectives into hierarchies.

c) Teachers don't always want to specify what a pupil will learn. There are always unplanned and unexpected learnings. Teachers must consider a wide range of possible outcomes from their lessons.

d) The objectives of the covert or hidden curriculum also need clarifying, stating and evaluating. How, when and where teaching occurs and the associated administration all result in pupil learning.

e) Goal free assessment could measure all that a pupil learns, but is fraught with difficulties of complexity, comprehensiveness and establishing cause and effect relationships.

5. Assessment must be valid and reliable

If assessments are not valid or reliable they are useless and cannot be used profitably as a basis for judgements or subsequent action.

a) Validity: Does the assessment measure what it purports to? There are three main types of validity: content, criterion related and construct validity:

i) Content: Is the assessment consistent with goals, content, skills we are trying to measure? Is the weighting balance according to the aims?

ii) Criterion-related: Does the assessment indicate performance like that on a similar criterion? This is the most used by comparing marks on tests and examinations with those on University Entrance or School Certificate examinations.

iii) Construct: Test performance is explained by a hypothetical construct. Predictions based on this construct are made about test performance and are then tested.

b) Reliability: Does the assessment give similar results repeatedly? Reliability is the consistency with which the instrument measures the attributes. Reliability is about stability of performance. It can be determined from parallel forms, or internal consistency. Assessment cannot be valid unless it is reliable. Common errors are:

i) basing decisions on unreliable information, such as a single test constructed at short notice and not analysed.

ii) measuring achievement in content or an ability that is easier to measure, and assuming that it applies to a related, but harder to measure area. This is invalid.

6. Assessment, learning and teaching

Assessment, learning and teaching are inextricably related.

a) Assessment methods affect the way pupils learn and teachers teach. This is particularly true if the teaching and the assessment are not planned together. School Certificate for example casts a shadow not only over fifth form testing, but also fifth form teaching, and even third and fourth form teaching.

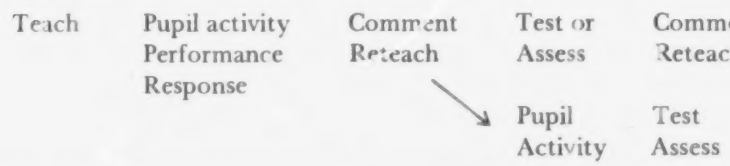
b) Assessment is a good servant but a bad master – assessment methods should reinforce teaching methods. Unless teachers are careful we get an overemphasis on teaching for recall of facts, or for easily assessed abilities.

c) Usually assessment follows teaching, but in some cases a pretest is given before teaching:

Pretest Teach Post test

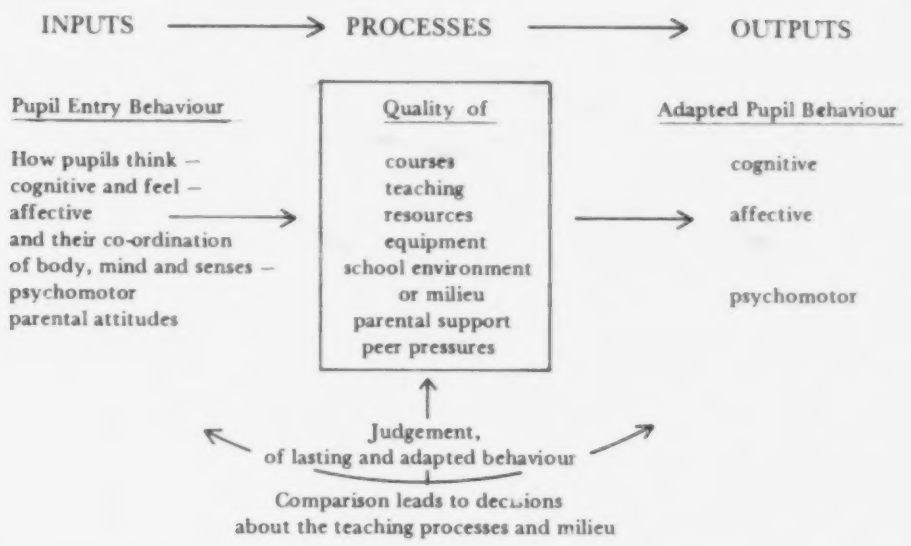
i) It is usually unsound to assess a pupil's achievement on his or her performance while in the process of initial learning. It is often unreliable, not known to the pupil, and can affect attitudes and approach to learning. Such assessment is about how and how fast a pupil learns and is not necessarily about what a pupil has learnt or how well.

ii) Good teaching allows pupils to develop through several responses and feedback.



iii) For such a method to allow pupils to have several bites at the cherry it is necessary to make up parallel tests, so that the first test can be used for teaching.

d) A system approach to teaching and learning



e) This is similar to a need assessment approach to teaching:

Desired Status or Outcome — Current Status or Entry behaviour = Educational Needs ↓ Teaching programme

f) Action must follow evaluation: remedial work, advice, assignment of next work, adaptation of next set, extension, decision to revise material etc. If this does not happen there is little point in assessing or evaluating except for summative purposes, and even then action usually follows.

7. **Measurement scales**

Assessments can be made using a variety of measurement scales.

a) Nominal : A nominal scale is a classification into categories. There may be no suggestion of superiority, e.g. black/white; male/female;

b) Ordinal : An ordinal scale involves ranking, e.g. Good, Average, Poor. It is a non-proportional scale. The order is known but not the range of each or the relationship.

Measurements in nominal and ordinal scales are processed using non-parametric statistical techniques.

c) Interval : An interval scale is a proportional ranking scale. Intervals are consistent, i.e.

$70 - 60 = 10 = 40 - 30$. However $40 \neq 4 \times 10$.

Most educational statistics and methods involve interval scales.

Grading pupils A to E apparently uses an ordinal scale, but it may be based on an interval scale, with A ≥ 75, 75 > B ≥ 65 etc.

d) Ratio : A ratio scale is an absolute scale with a fixed reference point, e.g. height jumped.

Measurements in interval and ratio scales are processed using parametric statistical methods.

Written reports are a form of assessment and the words used in statements about a pupil's achievement imply an ordinal scale.

Assessment and evaluation 2 : Methods

1. Objectives

a) There is a strong link between the quality of *objectives, teaching and assessment.*

b) There are hierarchies of aims and objectives – some are more general and subsume others, e.g. for a subject there may be:

syllabus or prescription aims ⟶ general objectives ⟶ specific objectives for teaching

c) Objectives can be stated in terms of abilities and of content. Abilities may include such things as knowledge, skills, and application.

2. Taxonomies

Analyses of educational behaviours have been made in three main categories: cognitive or intellectual; affective or attitudinal; and psychomotor, concerned with body, mind and sense co-ordination.

a) Cognitive (Bloom *et al*)

i) knowledge
ii) comprehension
iii) application
iv) analysis
v) synthesis
vi) evaluation

b) Affective (Krathwohl *et al)*

i) receiving (attending)
ii) responding
iii) valuing
iv) organization
v) characterization

c) Psychomotor (Simpson)

i) perception
ii) set
iii) guided response
iv) mechanism
v) complex overt response

d) Most subjects have been analysed and statements made about abilities or skills, which can be selected and/or adapted to describe what pupils are being taught to do.

3. Assessment methods

Assessment methods must derive from the purpose of the assessment. Assessments can be concerned with the product or result, or with a process or behaviour which is the result of learning:

a) Product: can be metal tray, assignment, test, project, weekly litter volume etc.

b) Behaviour: can be swimming ability, gymnastic exercise, social groupings, conversational ability etc.

c) Assessment can take place under natural or controlled stimulus conditions. Natural stimulus conditions could include assessment of lateness, reliability, or practice performance. Controlled stimulus conditions could be a test, or a race and usually measures optimum performance.

d) Tests can be designed to measure achievement, mastery or aptitude or they can be diagnostic. Tests usually measure optimum performance under controlled stimulus conditions.

pencil and paper
- supply or constructed response, e.g. short answers, completion, algorithm or process, essay
- selection, e.g. multiple choice, true/false, matching
- assignment or project
- self report (typical performance)
- attitude and interest scales
- Osgood semantic differential
- Stephenson's Q-sort.

behavioural
- aural/oral language test
- craftwork – making an artifact
- interviews – structured, usually searching
- laboratory tests
- systematic observations using rating scales
- peer appraisal
- socio-metric observations
- activity analysis, e.g. job analysis
- performance of a task
- unobtrusive measures

e) Different techniques provide different types of data. Data of the same type about the same abilities should be kept together. Data in different scales or measurement cannot be combined. If data about different abilities is

combined information may be lost. e.g. if recall of facts and principals is assessed out of 25 and the ability to perform processes is also assessed out of 25, then two pupils may both score 30 and appear to have equal achievement. However the pupils may differ markedly in their learning.

	Recall	Processes	Total
Pupil A	25	5	30
Pupil B	15	15	30

f) It is *not* wise to combine assessment of intellectual learning with measurement of attitude.

4. Planning tests: matrix

The first question must be – What is the purpose of the assessment? Then from the objectives a matrix can be constructed to indicate the weightings to be given to each area of content and each ability, e.g.

	Ability Processes				
Content or sect. of course	Recall knowledge	Computation and manipulation	Understanding	Application	Total
	weighting				
Arithmetic	2	15	8	–	25%
Algebra	–	15	10	5	30%
Geometry	18	10	12	5	45%
Total	20%	40%	30%	10%	100%

Assessment and evaluation 3 : Uses

1. Assessment programme

Each teacher section, department and school should develop an assessment programme. This may include assessments which are:

a) Terminal – end of course,e.g. for report

b) Periodic – a regular series throughout the course

c) Continuous – continuous updating of data about pupil performance in relation to specific criteria which allow cumulative judgement. Careful records must be kept. Continuous assessment is not applicable to all subjects. It affects pupil/teacher relationships and puts great pressure on students.

2. Developing a programme

Consider:

– the purpose of the programme and of each assessment

– frequency of assessment

- relation of assessment to teaching
- the effect of the assessments on students
- can the students do it in time?
- involvement of students in the assessment
- how relevant to the students are the methods and results of assessments?
- validity : consistency, comprehensiveness, and balance
- reliability : objectivity, and consistency of results
- marking time, efficiency, difficulty of marking
- how specific should the assessment be and how finely do the results have to differentiate

3. Assessment of a set, unit or module

a) Measuring achievement: Have the students learnt what they were meant to?

- cover all objectives
- cover all skills and abilities
- ensure balance and proper weighting
- make assessment methods reinforce teaching
- make it as easy to mark as possible, have a mark scheme
- design it for student feedback as well as for teacher feedback
- try to motivate students and ensure success
- keep it as simple as possible. Early tests in the course should be easy and directly on the teaching
- make straightforward assessment: expect 80 per cent success and you might get 70 per cent. If you've taught well the pupils should do well
- try out tests on teachers and pupils and revise them after use
- keep copies of tests and the analysis matrix
- make up parallel forms of tests
- provide model answers or teaching notes, or go over the tests with pupils. Recapitulation should teach and not just be model answers
- the assessment should provide diagnostic information and lead to subsequent action by both teacher and pupils.

b) Assessment for maintenance:

- Does the student still know important ideas, facts, processes?
- Keep these before him or her, particularly in modular subjects and assess them systematically throughout the course
- Can the student apply these important ideas, facts and processes to this set of material?

c) Pretests: to see if the student has the necessary pre-learning for this set, unit or module:

- Pretests are an alternative to setting out pre-requisites for the next future section of the course
- Should include straightforward questions only
- Should concentrate on essential learnings
- Should be accompanied by instructions to students about where and how to revise each point if they do not know it.

4. Cumulative testing

Cumulative testing of learning from previous units, modules or sets is necessary to answer:

- Has previous learning been maintained?
- Has it been integrated with earlier and later learning?
- Can the student recognize the area being tested?
- Can he/she use the appropriate information, methods to answer questions?

Cumulative assessment:

- Tests general principles and methods that run through the course
- Provide practice for examinations, indicate priorities and balance, and teach question skills
- Should be comprehensive, and have a balanced coverage of objectives
- Comprise straightforward questions
- Provide summative information: what can a pupil do now?
- Requires objective criteria. Teachers should mark and comment in terms of each pupil's achievement not just how he/she relates to others.

5. Assessment of attitudes

This is a difficult and controversial business, and easily becomes subjective or affected by extraneous events:

- Attitude measurement should be as objective as possible
- Attitudes can be measured by indirect assessments: number of sets completed, speed of return of work, standard of work, willingness to do extra work, comments in letters, queries, evidence of care or persistence
- Attitude signs may be relative to a student, i.e. evidence of extra work in one student may be poor performance for another
- Pupil attitudes may be affected by the course
- Give students quick, easy chances to comment on the sets, topics, methods and resources. But do not give students the opportunity to be frank and then, hold their frankness against them.

6. Processing and using assessment results

- Avoid number crunching

- Before manipulating or interpreting results consider how and why they are obtained
- Sophisticated statistical technology is available, but remember GIGO! i.e. garbage in, garbage out
- Keep maximum information. Avoid unnecessarily combining results. A profile may be more useful and informative
- Do not combine measures in different scales
- Usually avoid combining cognitive with affective assessments, i.e. knowledge with attitudes
- Judge your assessment procedures by:
  - pupil achievement
  - pupil understanding. Do the words get in the way?
  - do other aspects prevent students doing themselves justice on the main points?
  - do pupils copy answers?
  - do they paraphrase self-marking answers?
  - performance in related or parallel tasks
- Give speedy feedback
- Re-design assessment procedures in the light of results

7. **Evaluation**
   - Involves *making judgements and acting* on them
   - Depends on the quality and nature of the information obtained, which must be as objective as possible
   - Depends on the assessment procedures
   - Depends on the clarity and specificity of objectives
   - Make judgement and ACT!
   - Help students to make judgements and to ACT!

Assessment and evaluation 4 : Summary

1. **Assessment summary**

   a) Establish and define abilities being developed

   b) Define objectives: Consider development stages of learning and levels of mastery in learning a subject

teaching objectives	→ behaviour expected of pupil	→ specific behavioural objectives (attached examples)	→ questions in test checklist items etc.

c) Plan assessment programme: For each part:

i) clarify purpose (p. 72) formative or summative: achievement, mastery, diagnostic or aptitude

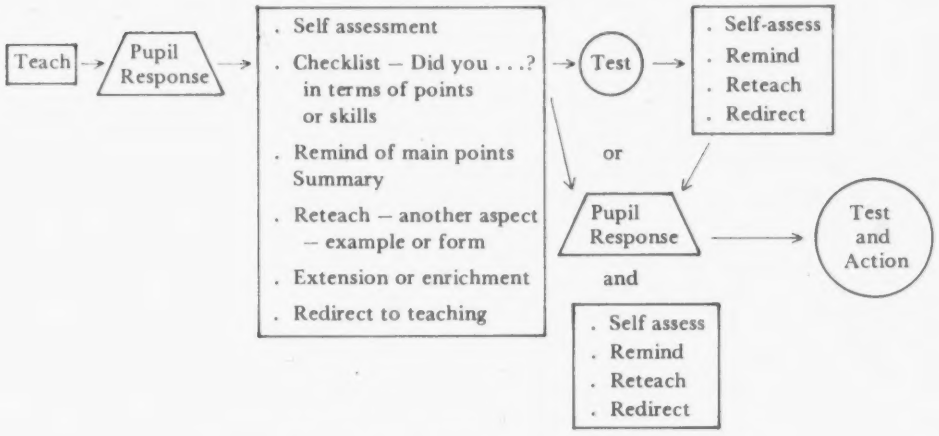
ii) decide on assessing normal activity or optimum performance, natural or controlled stimulus conditions (p. 77)

iii) assessment of product or behaviour (p. 77)

iv) terminal, periodic or continuous (p. 78)

v) consider the relationship of assessment to teaching:

- method of testing
- assessment as part of the *teaching dialogue*



- something is wrong if too many pupils succeed
- statistical procedures assume sufficient variability of pupil performance
- scores are often scaled to predetermined distributions and means

2. Criterion referenced tests

'A student's score on a criterion referenced measure provides explicit information as to what the student can or cannot do'.

- Education is seen as development up a scale of objectives or as progress through developmental stages
- Student learning is measured by performance on set criteria
- Tests are diagnostic, and identify areas of mastery and weakness
- Assessments are empirical. There is no assumed distribution
- Success depends on mastery. A large majority of pupils can succeed and are expected to

- Tests ascertain a pupil's status with respect to a well defined behaviour domain, i.e. a class of learner behaviours. e.g. the pupil can multiply any pair of single digit numbers
- Criterion referenced test results tell an individual learner how he/she is getting on
- Pupil performance on any criterion can be compared from year to year
- Test results indicate objective standards for individuals and groups
- A criterion may be based on what has been found possible for most pupils at that level – which is to some extent a normative concept
- New statistical procedures are being developed

PHILIPPINES

Topic : Evaluation in distance learning

Original source : Adapted from Ibe, Milagros D. "Evaluation in distance learning" in *Proceedings of the First National Seminar Workshop on Curriculum Writing for Distance Learning,* Manila. Office of Non-formal Education, Ministry of Education and Culture, Annex-II, p. 1-9.

Introduction

Evaluation in the formative sense is very crucial in module writing. Constant checks on learning are necessary since no immediate feedback is always possible from the teacher. It is only through skillful presentation of learning activities and use of tests that this feedback becomes possible.

The present paper defines and outlines functions of tests, and differentiates evaluation from measurement. It uses a taxonomy of what is to be measured and a matrix as to what may be the best method of evaluation for testing a certain skill or behaviour.

The paper outlines a very practical list of suggestions for item writing for different types of tests – matching, completion, essay question and multiple choice. The suggestions provide cautions and rules to ensure the validity, reliability and usefulness of each item. As print media is expensive there must be a safeguard against including irrelevant test items in the module.

The paper includes sample items which follow the suggestions and rules proposed for module writers. The items presented are varied and are a departure from stereotyped items which do not challenge creativity. The paper is a ready reference not only for module writers but for teachers, who use tests for various purpose but utilize media other than print.

EVALUATION IN DISTANCE LEARNING

by Milagros D. Ibe

1. Definitions

A test is a sample of behaviour under controlled conditions which yields a quantified measure.

The functions of tests are to:

a) assess learner capabilities;
b) guide learning;
c) give feedback to students and teachers;
d) maintain standards;

e) assist in the guidance of students;
f) motivate students;
g) diagnose students' difficulties;
h) evaluate educational procedures, materials and techniques; and
i) teach.

Evaluation is the process of collecting information which can be used to form judgements, which in turn will be the bases for making decisions.

Measurement is the application of quantification or numerical units to something.

Grading is the use of numbers or other symbols to indicate ratings based on standards.

2. Method of evaluation

What is to be measured	Objective test	Essay test	Observation checklist	Rating scale	Product evaluation	Projective teaching	Interview
A. Knowledge (cognitive)							
1. Recall of concepts, principles	√						
2. Comprehension	√		√				
3. Application	√	√					
4. Analyses	√	√					
5. Synthesis		√					
6. Evaluation		√					
B. Skills (psychomotor)							
1. Performance			√	√	√		
2. Behaviour			√	√	√		
C. Attitude (affective)							
1. Interests		√	√	√		√	√
2. Aspirations		√		√		√	√
3. Perceptions				√		√	√
4. Adjustment				√		√	√

3. Suggestion for item writing

a) Matching type

i) The list of options should be at least 50 per cent longer than the list of items.

ii) The list of items should contain no more than about eight entries to be identified.

iii) All entries in each list should relate to the same central theme.

iv) The test instructions should clearly state how matching is to be performed.

v) When a matching item consists of a word or phrase having many associations to be paired with a more specific word or phrase, the more specific term should be placed in the stem column.

b) Completion items

i) It is preferable to li mit the blanks to only one or two.

ii) Make sure that only one term will sensibly complete the statement.

iii) Leave only importan. terms blank.

iv) Place the blank near the end of the sentence.

v) Avoid repeating textbook phraseology word for word.

vi) Avoid grammatical cues to the correct answer.

c) True-false items

i) Limit each statement to a single idea.

ii) Avoid the use of double negatives.

iii) Avoid the use of specific determiners

iv) Make sure that the statements are unequivocally true or false.

v) Try to have an approximately equal number of true or false statements.

d) Essay-type questions

i) Frame each question such that it tests for a particular objective.

ii) Give definite instructions regarding the form and scope of the answer desired.

iii) Use essay-type items for testing upper level abilities.

iv) Use optional questions only when justifiable.

v) If possible, try out the question on some students to determine from the responses whether they interpreted the question as you had intended.

e) Multiple-choice items

i) It is better to have the stem as a direct question.

ii) The stem should set up a clear, definite, explicit and singular problem.

iii) Include in the stem any words that might otherwise be repeated in each of the alternatives.

iv) Response alternatives should be mutually exclusive.

v) Make all responses plausible and attractive to the less knowledgeable or skillful student.

vi) Make the options grammatically parallel or consistent with the stem.

vii) The response 'None of these' should be used with caution if at all.

viii) Put choice in logical order of presentation.

ix) The distractors should represent errors commonly made by the students in class discussions rather than general misconceptions.

x) The correct option should be placed in a random position among the options.

4. Sample items

a) Write two sentences containing *since*.

b) Complete each sentence by putting the correct word in each blank:

"Poor Ben has been in bed _ _ _ _ _ Tuesday."

"Oh dear, I didn't know the _ _ _ _ _ still in bed."

c) Write the letter of the word which best completes each sentence:

1. Poor Ben has been in bed _ _ _ _ _ Tuesday.

(a) for, (b) on, (c) in, (d) since, (e) by

d) For each group of words, write one word which would include all:

1. Chair, table, bed, deck _ _ _ _ _ _ _ _

2. Dog, cat, parrot _ _ _ _ _ _ _ _

e) Underline the correct expression:

1. I don't believe you! I think you're _ _ _ _ _ _ _ _ _ _ _ _ _

(talking, saying, speaking, telling lies)

f) Look at the word in capital letters. Each of the sets of words that accompany it contains one word associated with it. Underline the words which are most closely associated with the main word:

EQUIP

a) furnish, defend, lend

b) launch, present, arm

c) purchase, attach, supply

g) From the list of words given, choose the one which is most suitable for each blank:

A.	completely	E.	busily
B.	angrily	F.	incorrectly
C.	politely	G.	justly
D.	carefully	H.	quickly

"Write _ _ _ _ _," the teacher shouted _ _ _ _ _ _ _.

"Hurry up; you must get used to working _ _ _ _ _ _ _."

"Please, sir," a student said _ _ _ _ _ _, "I've finished."

"No, you haven't," answered the teacher. "You haven't _ _ _ _ _ _ finished until you've ruled off."

Meanwhile the boy sitting next to him was _ _ _ _ _ _ engaged in filling his pen.

h) Modified true-false:

Write T if the statement is true. If it is false, cross out the phrase or word which makes it false. Replace it with the correct one. Do not replace any of the first five words of each sentence:

1. Muscles of the stomach are striated and involuntary.
2. The main product of the dark reaction phase of photosynthesis is glucose.
3. A vein is a blood vessel carrying blood away from the heart.

If the mathematical sentence is true, write True on the blank before each item. If it is False, write on the blank the replacement for the underlined part which will make the statement true.

5^2 1. $3^2 + 4^2 = 72$

True 2. $7 : 9 = 14 : 18$

$(x + 5)$3. $x^2 - 25 = (x - 5)\ (x - 5)$

True 4. $12^2 = 16 \times 9$

i) Multiple-concept type: another variation of true-false type:

1. Plants or animals reproduce sexually when:
   a) Pollen is produced in a flower _ _ _ _ _ _ _ _ _ _
   b) Man makes buds or grafts _ _ _ _ _ _ _ _ _ _ _ _
   c) A plant springs up from last year's roots _ _ _ _ _ _ _ _ _ _
   d) An egg is fertilized by a sperm _ _ _ _ _ _ _ _ _ _ _
2. The body protects itself from disease germs:
   a) By a covering of skin _ _ _ _ _ _ _ _ _ _
   b) By having corpuscles in the blood which are able to destroy germs _ _ _ _ _ _ _ _ _ _
   c) By the production of antibodies _ _ _ _ _ _ _ _ _ _
   d) By cells which secrete substances capable of destroying the germs _ _ _ _ _ _ _ _ _ _ _ _

j) Cloze test:

Salt Making

In the Philippines, our supply _ _ _ salt comes from the sea _ _ _ _ surrounds these islands. Salt beds _ _ _ _ _ _ _ _ _ prepared near the shore. At _ _ _ _ _ tide, sea water floods the _ _ _ _ _ beds. The water is trapped _ _ _ these beds which

are especially _ _ _ _ _ _ _ for this purpose. When the _ _ _ is low, the sea water _ _ _ _ _ left on the salt beds. The _ _ _ sun causes the water to _ _ _ _ _ _ _ _ from the salt beds, leaving _ _ _ _ _ _ _ _ deposits of sand heavy and _ _ _ _ _ _ _ _ _ _ _ _ _ _ with salt.

k) Situation item:

During the night, Steve had been awakened by a violent thunderstorm. Walking to school the next morning, he saw a large tree blocking the street. At school, Steve told his teacher that a big tree had been knocked down by the storm, last night.

Steve's statement to his teacher was:

a) an observation
b) a prediction
c) an inference
d) a hypothesis
e) a measurement

l) Multiple choice:

1. Which of the following effects does ammonia gas have on moist litmus paper?

a) Blue litmus becomes red
b) Red litmus becomes blue
c) Both blue and red litmus are bleached
d) There is no change in the colour of the litmus paper

2. The influence of two new drugs on a students ability to learn is to be tested. Which of the following variables would be most important to control in the experiments?

a) The time of day the drugs are taken
b) The colour of the drugs
c) The willingness of the students
d) The amount of each drug taken
e) The shape of the drug pills

3. You suspect that a certain soluble compound contains hydrogen. Which of the following would be a way of checking your suspicion?

a) Place a sample of the compound in a bunsen flame
b) Heat the compound to incandescence and analyse the light produced with a pyrometer
c) Vapourize some of the material in a flame and use a retroscope to analyse the light produced
d) Pass some light through a solution of the compound and analyse the spectrum produced with a spectroscope

PAKISTAN

Topic : Developing assessment system for a distance learning system

Original source : * Adapted from "Developing Evaluation and Assessment Materials as part of a Distance Learning System". p. 3-50

Introduction

This material deals with strengths and weaknesses of any system used for assessing performance of students particularly with reference to a Distance Learning situation. It examines its utility in relation to (a) how it relates to the aims of the assessment; (b) what media of presenting assessment is used; (c) the nature of the assessment situation; (d) how the assessment is marked; (e) what and how records are kept. This reading material offers a slightly different mode of presentation than that indicated in earlier selections. Marginal notes have been added and the self-assessment questions have been followed by brief comments as an aid to the learners.

DEVELOPING A DISTANCE LEARNING SYSTEM

Introduction

For a conventional educational institution there is usually little concern about an assessment *system,* because it is handed down or evolved. But with a DLS it is necessary to take a fresh look at how assessment is to be organized and this becomes especially important in view of the numbers of students involved. The reason we are thinking about the system first, and not for example what kinds of assessment items to use, is that the system may govern the nature of the items. Take the situation of a course with 10,000-15,000 students. If we want an examination for them it will be necessary to carefully consider the arrangements for marking *before* designing the actual examination. With so many students it would be better to have some form of automated marking which means objective type questions. There may be other solutions, but it is important to consider the system before the questions.

We will consider five elements of the system:

a) how it relates to the aims of the assessment;

b) what media of presenting assessment is used;

c) the nature of the assessment situation;

d) how the assessment is marked;

e) what and how records are kept.

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There are of course other factors that will not be explicitly covered, for example the very nature of the DLS itself, as Question 2 below illustrates. Each of these five elements will be considered in turn.

Aims of assessment and the system

The two basic aspects of aims identified in 'An Overview of Assessment and Evaluation' on page 100, were related to teaching and learning, and testing. Here we are concerned with designing a system that satisfies these aims.

Teaching and learning and the system

We divide these into three further aspects: an opportunity to use knowledge or skills; giving of feedback; pacing the student's study.

. . . frequent opportunity

To allow the student an opportunity to try using his knowledge or skills, questions need to be posed at convenient and frequent times in the course. Assessment does not need to be utilized for this alone, because it should be a part of the teaching method. In a DLS this will be largely through the correspondence text having questions and activities at appropriate intervals.

. . . feedback

What is more important for a DLS is the nature of the feedback, the second aspect mentioned above. For an isolated learner in a DLS, self-assessment is the main form of assessment which helps with learning. The student is asked a question or given an activity and appropriate comments are given, with which he will assess his answer. These comments may be printed in the text or given by radio and television. There are obvious difficulties with this, e.g. the comments cannot be individualized and the student may not try very hard before turning the comments for help.

So the feedback should be: individualized, given at such a time and in a fashion that the student tries the questions conscientiously; at a time not too long after answering the question.

. . . pacing

Pacing the students work is related to the frequency of opportunity to try using skills and knowledge. It is more likely to be related to major assignments during the course.

The teaching/learning features of an assessment system

Question 1

In view of the above discussion on teaching and learning by assessment state some of the features of the assessment system.

Comments

- Self-assessment built into the material
- Continuous assessment at regular intervals
- Feedback giving details of success and appropriate comments individually
- Feedback very soon after the assessment is attempted

It is clear from the above comment that, for example, a final examination does not fulfil any role for the teaching and learning aspect of assessment, or does it?

Question 2

There are two basic ways of offering courses in a DLS: to have every student start and finish a course at the same time; to allow students to start and finish when they like. The former method is referred to as the 'lock step' method and the latter as the 'self-paced'. Comment on the implications of this for an assessment system, in the terms discussed so far in this section (3), particularly the continuous assessment.

Comment

There are two types of systems:

Lock-step system. Here events take place at pre-set times; for example the course starts at the same time, material is mailed to all students at the same time, broadcasts are related to the mailings etc. Some events may take place out of lock-step, for example face to face sessions may be arranged for individual students or groups of students according to local conditions.

Self-paced system. The student in this system determines when he starts and finishes the course and hence how long he takes over it; some may spend several months others several years. This means that broadcasts are not very sensible, especially if they relate to particular parts of the course, because it is impossible to predict when students will be studying any particular topic. In this case some form of audio-visual replay system based locally, at say a study centre, which the student can access when he wants, could be used.

Now let us consider a possible assessment system for each, bearing in mind the features outlined in the previous Question.

Lock-step system

Self-assessment. This requires activities to be built into the texts. These activities need to be related to those which are commented on or marked. As all students will be paced and studying approximately together then students can discuss these activities with each other and could in fact attempt group activities.

Continuous assessment. A basic requirement for a lock-step system is that definite dates have to be set for the completion of these assignments because the course has a definite life. This means having continuous assessment with: definite submission dates; or a submission period; or a final data by which all assignments have to be in. The method chosen will depend upon several factors: the kind of pacing required – definite dates force the student to follow a certain pace whereas a final date reduces that pacing to almost zero; the

'marking' or commenting system[1] employed – something considered in section 3.5; the concerns over cheating – a factor related to the testing role of assessment.

As with self-assessment, group working can be considered. but interacts with any testing role. (Group work has obvious learning advantages, but could render the testing function useless.)

Feedback. This requires individual comments and if all students are submitting on a specified date then overload of the commenting or 'marking' system is a problem. This is particularly true if a final date is given near the end of the course. Feedback is also difficult if an automatic (or semi-automatic)'marking' system is employed.

Rapid feedback. This is related to the overload mentioned above and implies either a high capacity centralized system of 'marking' or a dispersed system. These issues are taken up in Section 3.5.

Self-paced system

Self-assessment. There are no differences from the requirements of a lock-step system, except that group work cannot be effectively organized in a truely self-paced system.

Continuous assessment. The student chooses when he is ready to submit an assignment, but with some kind of safety-net which ensures that students are contacted if after a certain period of time nothing is submitted by them. This acts as a kind of pacing function.

Feedback. There is unliekly to be a problem of overload for the commenting process, but the continuity of experience may suffer. For example if a 'marker' does not receive anything from any students on a certain assignment for a number of months he may have forgotten useful points to make which he developed in earlier marking. Adjusting the 'marking' loads is one way of compensating for this likelihood.

Rapid feedback. This probably provides better turn-round of comments because overloading is less likely.

Testing and the system

There are three sub-aims for testing: for outsiders; for diagnosis; for student satisfaction. First let us consider the needs for outsiders in terms of a system.

For outsiders

... condifence in system

It is unlikely that outside employers will be concerned at all about the nature of the assessment system, except in so far as they have confidence in it. This usually means that assessment which is

1. Inverted commas are used with 'marking' to recognize that any mark may not be recorded for testing purposes, but used simply to help student learning.

primarily for outsiders is likely to be of a more conservative type because employers prefer what they know to something new and 'untried'. That usually means an over-reliance on traditional terminal examinations.

For diagnosis

. . . at stage of diagnosis

The assessment system used for diagnosis has to provide information at the stages when the diagnosis is being done. Thus if it is to decide whether a student can progress from one course to another it must be available at the end of the course, although it could be gathered throughout the course. Any other kind of diagnosis is likely to relate either to the teaching and learning function of assessment or to evaluation. For example if a diagnosis is made at a point in the course that a student is weak in subject X then he can be given support in this area, i.e. improving the learning. If on the other hand it is found through the assessment that many students are having difficulty with subject X the teacher can imporve the course.

For students satisfaction

The student will gain satisfaction from an assessment system if it provides him with grades quickly and probably frequently. He will also want the grades to reflect the work he does and this is a feature of the kind of assignments and the weighting given to certain grades.

Overlap between the major aims within the system

So far we have not tried to look at a system which tries to incorporate both aims of teaching and learning, and testing. There are obvious overlaps between assessment meant to satisfy each of these aims. For example giving a grade to a student as part of a testing function will not only satisfy him, but provide feedback to him which could, if acted upon, improve his learning. It is only in certain cases where there is little likelihood of overlap; self-assessment questions are purely for learning giving no indication in the testing function; traditional terminal examinations are almost entirely of a testing nature,although the marks will tell the student something about where he ought to improve.

The question arises as to whether or not separate systems should be designed for the two functions. It can be done, but having assignments which are not used to grade a student (i.e. the learning function) does not guarantee that the remaining assessment, to test students, is free from this learning function. Even if a student is not told the grade of an assignment until after the course is over, then the actual exercise of completing the assignment will be a learning experience. So even if there are some assignments which are not used to test the student it does not mean that the remaining ones will have no teaching learning function. It might be better to recognize this and not to try and provide completely separate assignments for each aim.

Assignments that do not count in the testing function lack the motivational element which is present in those that are counted and this can reduce the former's effectiveness for learning.

The assessment situation

There are a number of features of assessment which relate to the assessment situation, these are often not made explicit but underly the design of assessment systems. Three will be considered: stage of course when assessment occurs; conditions under which assessment occurs; need for identity check. These are different for the two major aims. Let us first discuss them in relation to testing.

Assessment situation and testing

Stage in course. Most testing occurs at the end of a course, the most familiar form being the final examination. Obviously the stage at which testing takes place determines the range of knowledge and skills available for testing – a test at the beginning can only cover a limited amount, one at the end can cover all of the course.

Physical conditions. The traditional form of testing has been the final examination which is of a limited time and with limited access to learning resources. Typically an examination ranges from 1-3 hours and the candidate can only rely upon his own memory and retained knowledge and skills. It is somewhat irrational when examinations across a whole range of skills and knowledge (at almost any particular level) have the same length of examination under the same conditions. Why for example should someone studying engineering, and who will have to design mechanical parts in industry, take a three hour examination with no reference material, just as a student of literature will have to? Are the skills of engineering-design normally exercised in a three hour period in industry, do they take place without reference books being available? Does a writer or a critic spend three hours on a piece of literature? Obviously not, these magical timings are the result of administrative convenience and are rarely reconsidered in designing an assessment system. For any system which is trying to test students, and which reflects the skills and knowledge developed in the course, then these two variables of time and access must be considered afresh. It is only after considering the needs of the course that administrative issues should be considered.

Continuous assessment done in the students own time has been a relatively recent response to these limited conditions. Here there is almost no limit to the time the student can spend on the assignment, provided he completes it by a prescribed date. He can also access any learning material he likes – including other students or 'experts'. However, continuous assessment need not be like this. The student could be required to attend a centre several times during the course and sit a traditional examination.

Identity check. In a traditional educational institution where the student and teacher are in continual contact the need to establish that the work of students in assessment is truly his work is not so crucial (although of course the closeness of students encourages collusion). In a DLS there must be some mechanism by which we can ensure that the assessment grades of a student truly reflect *his* knowledge and skills rather than his friends', father's, next door neighbours' or other students' on the course, note that this conflicts with the encouragement of group work when the aim is to develop the learning aspect of assessment. However this does not imply that all the assessment on the course needs to ensure that it is the student's own work. Most conventional systems employing continuous assessment done under uncontrolled conditions rely upon the honesty of students to submit their own work. In the USA there is now a large industry of companies who will give you a 'term paper' (an essay) on the topic you specify and in some

cases even for the particular teacher involved! You buy the paper and submit it as your own with a guarantee of getting an 'A' grade! A compromise could be to combine a test which proves the identity (e.g. an examination in a fixed place with identity cards) with one with no such check, and any excessive discrepancy can then be investigated.

Question 3

Below is a description of an assessment system for a vegetable growing course, comment on the nature of the three features of testing (outlined above) employed in the system.

The student has to grow certain crops as part of the course. During the course he has to submit regular progress reports on what he has done and the condition of the garden. At the end of the course he goes to a centre with his produce which is measured and weighed as appropriate. At the centre he also attempts two tests, one which gets him to account for the quality of his produce in terms of the conditions (e.g. quality of soil, weather conditions etc.), for this he is given the progress reports previously submitted. There is a time limit on this test of 2½ hours. The second test consists of some written problems describing situations where something has happened to a crop. The student has to diagnose the problem and suggest a remedy. No material is allowed into the examination and there is an 8 hour time limit whereas a student who has understood the course will complete it in 2 hours.

The above system may be bizarre and contain some difficult administrative problems, but ignore these for the moment and concentrate on the three features of stages of course, physical conditions and identity check.

Comment

There are several components to the assessment system:

a) Progress reports;
b) Measurement of produce;
c) First test using progress reports; and
d) Second test on problems.

Each will be considered in the light of the three features:

a) *Progress reports*

Stage of course. This is a continuous assessment which indicates the student's skills at various times of the year. It is possible that each report can require the student to look back over all of the course up to that point. This implies that the last progress report will be a kind of terminal test.

Physical conditions. The student has almost unlimited time and access to learning material and other people's help.

Identity check. There is no guarantee that the reports are the student's own work.

b) *Measurement of produce*

Stage of course. This is quite clearly a terminal test.

Physical conditions. The test has effectively taken place throughout the course hence the student has had unlimited time and access to learning resources and other people. The actual measurement is an administrative procedure.

Identity check. The student could obviously use someone elses produce and through this test no check is available.

c) *First test using progress reports*

Stage of course. This is a terminal test although it does incorporate the performance as shown in the progress reports.

Physical conditions. This has a strict time limit and is in many ways a test of speed. This is so that those who had not been honest in earlier assessment activities would have great difficulty in completing the test. They would have no access to learning resources and would have to reply upon their own knowledge and skills.

Identity checks. As hinted above this test provides a cross check, someone doing very well in the progress tests and possibly the produce measurement but who had cheated would thus do poorly in this.

d) *Second test on problems*

This is identical to the first test except that the time condition is removed so that no test of speed is made, thus providing evidence of competence for those who did poorly in the first test, not because of cheating in other assignments, but because of slowness of working.

As said earlier the tests ignores many practical problems of administering them, and also some technical problems of how the marks from the various assignments will be brought together.

Assessment situation and learning

Now let us turn to the second aim of assessment, the aiding of teaching and learning. Here there is much less concern with the situation of doing the assignment because it is for the student's benefit and it is up to him to apply the situation he thinks fit. Even if you specify the situation in the end he is free to vary the situation.

Perhaps only the stages of the course are relevant, so that the student exercises himself at appropriate points in the course. Conditions in relation to time and access may be relevant if the student is hoping to gain some idea of how he will cope in an examination or other kind of test – a kind of self-assessment. Identity checks are irrelevant – as indicated above it is for the student's own benefit.

The media of presenting assignments

This topic is related to the assessment methods used, which is the main issue of Section 4. However in this sub-section these methods will be considered as part of an overall system. The important principle is that whatever media are proposed they should be accommodated within the system.

The discussion in this section will confine itself to four main media: pencil and paper – written or drawn – assignments; oral – as might be used to test a language; objects – where the product is important, practicals – where the process is important.

Pencil and paper assignments

These are the most common and should need little explanation to anyone. Here language is an intervening element whether it be the written language or ones connected with drawing – technical or artistic – or mathematical language.

The requirements as far as a system is concerned are modest, and can even be automated when, for example, objective tests which are machine marked are employed. They also allow a wide range of activities to be tested, but are basically knowledge based. Anything that involves manipulative skills, whether on their own or in conjunction with intellectual skills, has to use the other media. As this medium is so common a detailed discussion is unnecessary.

Oral assignments

As indicated above these are commonly used in language courses. They are also employed as a cross-check on other methods, where there is some doubt as to a student's ability; in UK this is known as a viva-voce. In high academic levels it is often used as a way of exploring complex subjects. Another useful area is when written language is a problem, whether because of a disability or illiteracy. In this case the nature of the question may be identical to those in an equivalent pencil and paper test, but with the answer being given orally.

There are enormous administrative problems in using oral examinations; such as providing people to ask the questions, some way of receiving the reply (either by a person listening and making an assessment or by recording and later making an assessment), techniques for ensuring consistent standards, and handling large numbers of students. Despite this it is likely that for a rural audience oral assessment could be important. (One way round this is to have a literate person who can take down the oral answer, but this still requires an army of scribes!)

Objects

The example of the measurement of vegetables produced during a course on vegetable growing (see Question 3), is an illustration of this kind of assessment. The problem is how are the objects, whether they be vegetables, pieces of furniture, tools etc., to be transported from the student to the marker or commenter? (Or how does the marker go to the objects?) If the objects are photographs or paintings then there is little difference from pencil and paper assignments but if they are 3-dimentional objects problems arise.

The process of actually assessing these objects may not really prove a problem, and is a function of the method of assessment.

Practicals

Here the product may be important but the crucial aspect is *how* the product is produced i.e. the process. This implies either that the student must do the process under the observation of an assessor, or make notes, answer questions etc., which indicate how he did it. In this latter case an end result, whether it be a measurement or a physical product, will have to be submitted to show evidence of having actually done the process. This type of assessment is common in science subjects when the practical element is assessed.

If the record of the process is a written one then the difficulties in arranging such a test are not large – when identity check is unnecessary then the student needs no supervision, when it is then the invigilation is a relatively simple task. However if the written record is inappropriate the situation is much more complex. For example suppose in a course on village committees there is some teaching on running a meeting which has to be assessed in practice (as opposed to theory). Some one has to observe the student running

a meeting and make an assessment. The arrangements are difficult and expensive, and require a large number of capable assessors. Again there may also be difficulties connected with making assessment of processes.

The marking system

As pointed out at the beginning it is impossible to separate decisions about the method of assessment appropriate to a particular course without considering the system which will operate it; this becomes acute in the case of a marking system. Suppose you have a course with 5,000 students and you decide that there will be five assignments throughout the six months of the course. The student does these in his own time and submits them at specified dates. The course has no tutors so they cannot be utilized to mark the assignments, instead they are returned to the centre for central marking by staff. Let us suppose there are five members of staff and we want to know if they can cope. Some assumptions are necessary: the staff work a 6 hour a day on marking and 6 days per week; in the first instance let us assume it will take 10 minutes to mark and comment on one script.

1 man does 36 hours/week
5 men do 180 hours/week
6 scripts/hour
5 men do 1080 scripts/week

i.e. It will take approximately 5 weeks to complete the marking of assignments, which implies that for the 5 assignments they will be marking for 25 weeks or the approximate length of the course.

If we are running a DLS where the staff are supposed to be constructing courses then clearly to have them tied up marking all the time is unacceptable. Thus the marking system must be changed. Either we introduce a separate set of markers who do this full time (expensive) or we change the nature of the assignments such that we can reduce the time taken to mark.

Clearly the marking system and the kinds of assignment items must be thought of together.

Types of marking systems

There are a number of ways in which systems could be categorized and we will consider two basic types: mechanical or semi-mechanical; human expert. The first kind implies that the decisions about the students' answers have been made already so that no judgement is involved. Such a situation occurs in an objective question, where a student has to choose from a pre-determined set of answers, and one or more is the correct one. The second kind, involving the human expert, requires judgements to be made about each individual students' answers. This occurs when, for exmaple, an essay question is answered.

Here we will not be concerned so much with the types of questions but the ways of organizing the marking. We will consider three basic kinds of marking: self-marked by student; centrally marked by mechanical means or experts; tutor marked.

Self-marked by student. This type of marking is appropriate for assessment exclusively used for improving learning and can take the two basic forms referred to above. When mechanical marking is employed the studnet will have chosen an answer form a list (say A, B, C, D, E,) and can look up the correct answer (say C) and check whether he was right or not. When a human expert is required the situation is not so clear-cut. The student is obviously not an expert and hence needs guidance on how to assess his own answer. If the question is some kind of calculation then a model answer will be sufficient; if it is a fairly unique answer that is required then some criteria will have to be spelled out. This latter situation could be done by giving a sample answer with some discussion on the criteria and some anticipated problems students might meet. Whatever technique is employed it will not give truely individual feedback to the student, a requirement of the learning role of assessment.

Centrally marked. First let us consider central marking by mechanical or semi-mechanical means. Students will submit their answers, which are chosen from a pre-determined set, to the central office. If facilities are available an optical reader can record the student answers, put them into a computer store and the computer can then mark them, using a pre-determined list of correct answers.

By mechanical means

However it is more likely that a semi-mechanical system would be employed. This consists of a clerk checking the answers against a master list or a masking sheet.

Mechanical methods have profound influences on the kinds of assessment items that can be set, again emphasizing the need to think of the system as well as the details of assessment methods simultaneously.

Central marking by experts was illustrated by the earlier example where central staff marked all the scripts. This, as the example illustrated, is rarely a wise system for a DLS which ought to be dealing with large numbers of students. A variation would be to employ markers situated near the central unit of the DLS who can mark the scripts on a part-time basis. This is the system used by examination boards. However a crucial aspect is the need to mark quickly, especially for assignments done during the course – so that the learning role of the assessment is capitalized upon. The need for them to be near the central unit is so that there are no distribution problems.

By experts

The central team will aid the process of ensuring comparability of standards because of the ease with which they can meet and consult.

Tutor marking. This describes the situation where tutors throughout the country are called upon to mark students' work. This is usually combined with a face-to-face teaching function, and hence it is possible for the tutor to give individual attention to a student's work

. . . gives individual feedback

based on some knowledge of that student. (Central markers must take the student's answers at face value and have no personal knowledge of a student's needs or difficulties). This is important in the teaching and learning role of assessment.

. . . and immediate feedback

This type of marking allows quick feedback to students, and can, depending on the routing of scripts, reduce the administrative handling of assignments. In the case of the AIOU, tutors are sent scripts by students which they mark and return immediately to the student. The central administration can then be sent the marks at an appropriate time.

. . . but difficulties with standards

The problems lie with the testing role of assessment marked in this way. There will be a large number of tutors geographically distributed, and yet their marking must conform to a uniform standard. This involves good briefing, tutor notes and monitoring.

Application of the differing types of systems

The issues are of importance, the resources required, and the purposes of assessment they serve. Some references to each of these has already been made.

Mechanical Systems

. . . handles large numbers

. . . inexpensive

Resources required. First let us consider the mechanical versus the human expert systems. It is obvious that mechanical methods can handle large numbers of students quickly and cheaply. The cost goes into designing the questions, any equipment necessary (which in the case of a marking sheet is very small) and the staff doing the masking. The latter cost will be relatively low because either there will be, few, for a computer system, or unskilled and hence low cost, for a manual system.

Human experts

. . . costly

. . . slow

Human experts are a costly item both because they are highly skilled, and they take a relatively long time to mark a student's work. This is true irrespective of whether they are centrally based or tutors spread out over the country. (There will be distribution costs for the tutor marking but this will be marginal).

Example

An example will illustrate the differences between the costs involved in mechanical and expert marking.

There are two kinds of assignments which students do during the course (i.e. continuous assessment): Computer Marked Assignment (CMA); Tutor Marked Assignment (TMA). The former consists of questions with pre-determined answers which the student chooses from and then marks a special form. He sends this to the University's central unit, where an optical reader reads and records the answers onto magnetic tape. A computer then analyses the answers and awards a mark which is put on the students file. The computer then issues a letter to the student saying what his overall mark is.

The TMA will consist of questions which do not have pre-determined answers. The student completes this assignment and sends the answer to his tutor (allocated at the beginning of the course).

The tutor marks the assignment sends it to the central unit along with a special form showing comments and the grade. The central unit enter into the computer the marks awarded, and may photocopy the script and they return both the script and a copy of the form to the student.

The cost of a CMA per student is only a few pence (Rs.1) whereas the cost of a TMA per student is well over Rs.25. From this it is obvious that the CMA is very much cheaper than the TMA.

Purposes of assessment served. The two aims of teaching/learning and testing have different requirements of marking, which are fairly obvious and have been alluded to in the discussion so far. Try the following question which attempts to draw out the implications of a marking system for the two aims of assessment (teaching/learning and testing).

Question 4

Consider the three major marking systems discussed earlier in the light of the aims of assessment. Take the features of each aim and see how each marking system satisfies them.

The record system

These days, with computerization, record keeping is not a great restraint on a system.[1] However in developing countries record systems are usually manual and the design of an assessment system must take account of the record keeping. Recording of marks and any manipulations of them will have to be minimized so that the huge numbers of a DLS can be handled with some reliability.

There are two inter-related features of the record system: *what* is recorded and *how* it is recorded. The assessment system records, are also an integral part of the DLS's general record system, particularly student records, and are influenced by these.

This is a large area to discuss, and one in which little systematic work has been done, and so we will consider one or two aspects as follows:

- the scores to be recorded
- manipulations of the scores
- other operations
- general system student records
- access to records.

Nature of the scores recorded

We will be considering grading scales later, but it is obvious that either numbers or letters can be recorded, and if numbers, then various kinds: 0-5; 0-10; 0-100. Mundane though it may be, provisions have to be planned for the kinds of scores required in terms of space provided or digits accommodated. It is unlikely that different grade systems can be tolerated in manual records because of the manipulations this involves.

The next aspect of the score is how many assessment components can be accommodated, and does the nature of them need to be indicated?

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1. Except of course, that the long 'lead-in' time which is sometimes necessary to make even minor changes to a computerized system may reduce its flexibility.

At the simplest level continuous assessment needs to be distinguished from terminal examination scores. Again the number of components will depend upon the space that can be made available on the physical record.

Finally we may have other kinds of records such as comments on the student or his assignments which in some way qualify the grades. A decision is required on whether or not this is recorded and if so whether it is part of the primary student record or some secondary record.

Manipulations of scores

Two issues that arise are the scores in a form that can be manipulated and how the manipulation is handled in the record system. Firstly let us consider the problem of letter grades. These usually have some kind of conversion to numerical terms. In addition, if a mixture of numerical and letter grades is considered then the number of manipulations is likely to cause problems.

There are two main problems, the frequency of operations and the physical process used.

Frequency of operations. In a manual system with say 30,000 students (not a large figure when you consider that by 1979 the AIOU had 80,000 and by 1983 130,000) and say five continuous assessment assignments and an examination score, if they are recorded in letters and have to then be combined in some way the work will be astronomical.

Physical process. When a computerized system is used any intermediate steps in a procedure do not need to be recorded, because provided the computer is programmed correctly nothing will go wrong and checks are unnecessary.

However when a manual system is employed any manipulations probably need to be recorded at intermediate stages for checking purposes. You cannot do 360,000 manipulations on the back of an envelope.

The outcome of considering the number of operations and the physical process could be a reduction in the number of assessment components and the use of a numerical grade scale. One other way of reducing the manipulation problem is to spread them out over time. This can be done through the design of the general system, by students submitting assignments at their convenience. Another way is to have an accumulated record, i.e. when each assignment score is received then it is combined with the previous ones immediately. This of course is simple when the scores are added, although there are other ways.

The record would look in part like this:

Assignment	Score			
	50			
	60			
		110		
		70	180	
			60	240

Although this is more laborious than writing down four numbers and adding them up it means that the work is spread out and visually the adding can be done easily in isolated steps. Of course I haven't tried this and it is probably worth trying to simulate your manipulation situation while experimenting with record formats. Accumulation of scores in this way does, of course, become irrelevant when, for example not all grades will be counted. In the AIOU's Elementary Arabic Course, there are five compulsory assignments, but only the scores for the best htree of these will be taken into account in calculating the final overall mark thus the combining of scores has to wait until the end of the course.

Records and other operations

Besides manipulations of the scores there are a number of other operations done:

- movement of script around system
- movement of score round system
- monitoring operation
- recording special circumstances

Each of these will be discussed, but only briefly.

Movement of script. This is related to the marking scheme employed and will vary depending on whether it goes through the centre (for mechanical or expert marking), or through a tutor. Any separation of the script and the mark implies records, and takes us on to the movement of the mark.

Movement of mark. If the script and mark are separated, as for example in the AIOU, where the tutor submits a cumulative record at the end of the course, then this record has to be transferred to a central record. You could for example debate the relative advantages of having a record sent in for each assignment – to spread the load. Should the cumulative record be checked?

It is relevant here to consider how scripts are monitored to check the markers' work. This is related in part to the movement of the script. For records you have to decide how you change scores on the basis of monitoring or how you record for a particular student the result of monitoring his tutor, e.g. to record that he is too strict. The answer may be that you can't be that sophisticated.

Recording special circumstances. The comments above about recording the results of monitoring is one instance of special circumstances. Do you put a code mark next to a score to indicate that the tutor is lenient by one grade? Similarly how do you record and take into account that a student was ill on the examination day? These are the kinds of problems in recording special circumstances.

General system student records

So far we have said nothing about student records in general which will record at a minimum the student's name and address. Their form will affect the extent and style of assessment records. If cards are used for student records then space will be at a premium. If some form of ledger then entering grades could be tedious. The student records might also be related to the general system of operation; for example the two types put forward in Question 2 – self-paced and lock-step. The self-paced system distributes the operations of the record system over the year assuming that students do not all suddenly

decide to submit an assignment. Also the submission of an assignment is the key to a mailing. Conversely the non-submission requires some initiative to be taken. This implies access to students who have not submitted an assignment for the specified period without presumably checking every student.

For the lock-step system dealing with all the students at one time will be a problem and the capacity of the DLS to 'turn round' all the students at the end of the course, so they can start another one, may limit the amount that can be dealt within the record system. Even where a computer is used, the critical operations holding up turn-round are the end of year examinations.

Access to records

When discussing the self-paced system, and the checking of students who have not submitted for a certain period, we are considering access. If a computer was available we would just get it to check every file. But with a manual system this is impossible, instead a second set of assessment records may need to be kept which give you a daily check card. For example when an assignment arrives the student's number is put on a card which has to be checked in say 3 months time meanwhile the number has to be removed from the previous card. . . Thus we have an extension of the assessment records into the system operation, caused by the difficulty of access.

There are other access problems more associated with the assessment system in general. At the end of the course the scores of the students have to be made available to some group like an examination board who will consider the marks and decide those students who are to be awarded a pass. If student records are kept by course and not by student at least the assessment records will be confined to one part of the record system. But does the board look through each record card or entry in the ledger? Does someone copy the scores on to special cards which are then arranged in some order?

These are important problems and they do, in their small ways, curb the flexibility that is desired in an assessment system. If the record system can only cope with two scores then clearly the scope of the kinds of assessment components is severely limited.

Miscellaneous problems for a system

There are a number of usual situations or problems which an assessment system must cope with, especially if the DLS is in a developing country dealing in part with the rural population. The ones considered here are illiteracy (or semi-illiteracy); group study; non-graded assignments; cheating. The first three are unusual situations, and the fourth a problem!

Illiteracy and an assessment system

Reference was made earlier, ADLS, particularly in a developing country is suited to dealing with illiterates and semi-literates provided the non-print media are utilized well, e.g. radio, film strips, television. This implies that the media of assessment must be similarly used. There is little world wide experience of assessment for this group except in terms of literacy teaching.

It was suggested that a literate person could be an employed to take down the answers of an illiterate. But this, as noted, requires a large number of 'investigators'. If

they employ pre-determined answers then the assessment time could be short. To reduce the number of scribes this could be done in groups – covered in the next sub-section. In any case the questions themselves would have to have less verbal components and use photographs, and illustrations whereever possible.

When audio recording machines become plentiful then the illiterates could record a verbal answer to questions given verbally. For example the student could be sent a tape with the question on one side of it and blank on the other for his answer. The limited space will force him to be concise. The question could have associated with it photographs and illustrations.

So far I have assumed that we are eager to test the student, but it is likely that for this group of students the learning function of assessment is going to be more important. This again brings us to group study.

Group study and an assessment system

I mentioned above the possibility of group study. For rural populations with a low literacy tradition and a strong oral one, talking and discussion will be a normal way of exchanging and taking on new ideas. Indeed the whole idea of isolated individual study is likely to be foreign to rural communities where everything is open and privacy a perversion. Thus learning can be geared to group study.

Let me make a brief diversion to explore a little of what this kind of study might be like. Consider again a course in vegetable growing for rural women, intended to supplement the family diet of cereals. In places like Pakistan, illiteracy among women is very high. In addition they are likely to welcome an opportunity to meet with other women. The distance learning could consist of a radio programme broadcast with some related visual material. This visual material is linked to the broadcast by a group leader, who is not an expert in the course material, but has been shown how to display the material and run the study group. After the broadcast the group discusses the ideas in the programme and can go back through the visuals to clarify and take further, points in the programme.

The programme could contain some questions for discussion, e.g. what are the best methods of combating crop diseases in the local area, and/or the group leader (assumed to be literate) could have some printed material with questions. The group would then discuss the questions and arrive at a concensus over the answers, although of course an individual could stick to alternative answers. These answers could be written down by the group leader and sent in to be marked.

This brings us to a difficulty when the assessment has a testing function, remembering however, the comments about the learning function probably being the most important. If a grade is given how is it allocated to the group? Does each individual get the same or is some attempt made to evaluate the contribution of each?

This problem occurs to some extent in group projects which are common in engineering training, and which count towards a student's final grade. The first question to ask is what is the purpose of the testing function? There are three functions: for outsiders; for diagnosis; for student satisfaction. Each of these will require different attitudes to the allocation of grades, and various courses will place different importance on each of the three functions.

Returning to the women studying vegetable gardening, it is possible that diagnosis would be important to decide if they are ready for the more advanced course on vegetables or whether another simple course in nutrition would be more use. Student satisfaction will almost certainly be important, indeed it is unlikely that there will be any situation where student satisfaction would not be a relevant function. Given these two functions it would be quite sensible to award a group grade as they can all help each other even when the group is not officially studying – a kind of shared competency!

Non-graded assignments

It is difficult to design an assessment with a purely testing function, however it is possible to design ones with only a teaching and learning function. These can be referred to as non-graded assignments.

With these, the important aspect of the teaching and learning function is the feedback. The first issue is one of motivation. When testing a student there is considerable incentive for a student to complete an assignment, however, when no grade is awarded he is likely to be reluctant to put the required amount of work into it. Although it is for the student's benefit, it is often true that optional aspects of courses are disregarded because under pressure they can be dropped. This is one argument for not trying to create separate systems for the two major aims of assessment, and by providing good feedback etc., then assignments which are used primarily to test a student can achieve both aims simultaneously.

Despite this reservation there is no doubt a case can be made for non-graded assignments, so let us consider one or two types. The common method would be to give the student a sample of the assignment that will be used to test him. This is often done for terminal examinations by giving the student a practice run. Not only does it help the student identify weak points etc. it also improves his ability to do such tests.

Another, more unusual method is to have a two-stage assignment with the first stage, say, being non-graded. This would be useful if the assignment were to carry out an experiment designed by the student. The first stage, non-graded, would require the student to design the experiment and the second to actual do it. The first stage allows the student to see to what extent he was on the right lines before actually performing the task. It cuts out major misinterpretation on the part of the student and provides a great deal of incentive to do the non-graded part. However it does confuse just what the student is being graded for at the second stage. If the tutor gives substantial help at stage one, to what extent is his help directly improving the students grade at stage two?

A third kind of non-graded assignment is one which bears no relation to the testing assignments. It might be justified because testing would be inhibiting, for example, with some creative exercise, or that student should be given an opportunity to try out his knowledge and skills beyond that required by the course – a kind of extending of the student's motivation to complete the assignment!

Cheating and an assessment system

In developing countries there is often great pressure on students to be successful in study, especially in general education. This puts a lot of pressure on students to cheat. Where conditions for completing the assignment are not controlled, then cheating can

occur. However before worrying about this in relation to continuous assessment it is worth noting the problems with examinations. It is not unknown for a candicate to get a friend, who is an 'expert' in the field, to attend the examination centre for him. An identity card with photograph may seem like too much of a fuss. Some cheating must be tolerated, and provided it is not wide-spread undue procedures to eliminate it are not necessary.

As has been mentioned previously (Question 3) one way to counter cheating is to have assignments which cross-check the student's ability. This entails having one or more tests which have an identity check (like a traiditonal examination) which can be used to compare with the grades obtained where no ideitity check is available (e.g. continuous assessment done in students own time).

To reiterate the points made: when learning is considered to be important students co-operating over assignments should be encouraged; where testing is important checking procedures should only be instituted when cheating is widespread. In any case cross-checks of scores from different assignments is one way of sorting out those who may be cheating.

PHILIPPINES

Topic/instrument : Evaluation instrument for module development

Original source : Adapted from proceeding of the *First National Seminar Workshop on Curriculum Writing for Distance Learning.* Manila, Office of Non-formal Education, Ministry of Education and Culture, 1982. Annex 4, pp. 1 - 3.

Introduction

The minimal teacher-student interaction in many of the distance education techniques demands rigorous evaluation of modules. Both effectiveness and low cost are criteria. Thus, it is important that after a module has been written its form and context be appraised against a set of standards. This evaluation instrument presents a compact and comprehensive tool for judging practicability and effectiveness of a written module.

The instrument is a descriptive rating scale using eight components namely, title, objectives, instructions to the learner, context, illustrations, learning activity materials, evaluative measures and physical aspects. Both form and content are emphasized. Every component is followed by specific descriptions against which the module is to be appraised. While content is woven within many components, form is also emphasized. The reason behind this emphasis may be the fact that modules should, in principle, be reuseable lest they lose much of their utility for distance and mass education. The rater is also given the option to write other comments or suggestions for the improvement of the module. The merit of this instrument lies in the fact that it is a ready material for use by module writers at all stages of developing distance learning materials.

Evaluation Instrument for Module Development

Note: Evaluation of this module is indispensable for its improvement so that it may be effective as a learning module for out-of-school learners. Therefore, you are requested to indicate your sincere evaluation by checking your responses in the space within the corresponding column at the right opposite each question.

Please give your suggestions or comments in the blank space provided at the end of this evaluation instrument. Thank you.

Title of module: _____

Questions and components	Does not apply	None	Inadequate	Adequate	Very adequate
I. Title					
1. The title is relevant to the subject matter content.					
2. It is interesting.					
3. It is attractive.					
II. Objectives					
1. They are stated in behavioural terms.					
2. They are achievable through the content, materials and learning activities.					
3. They are comprehensive enough for the major subject matter content.					
4. There are objectives for important cognitive outcomes.					
5. There are objectives for important psychomotor outcomes relevant to the nature of the learning activities.					
6. There are objectives for affective outcomes.					
III. Instruction to the learner					
1. They are clear and easily understandable to the target learner.					
2. They are enough to cover all activities.					
IV. Content					
1. The concepts are accurate.					
2. The concepts are supported with learning activities.					
3. The concepts are sequentially arranged.					
V. Illustrations					
1. Necessary illustrations are provided.					
2. Illustrations are suitable to the subject matter and the learner's level.					

Questions and components	Does not apply	None	Inade-quate	Adequate	Very adequate
VI. Learning activity materials					
1. They are supportive of the objectives.					
2. They are properly sequenced.					
3. There are linkages provided between activities.					
4. They call for learner interaction with module.					
5. The language is clear and understandable within the target–out-of-school learners' levels.					
6. The subject matter is presented in an interesting manner.					
7. Incidental instructions and referrals are clear.					
8. There are provisions for enrichment, reinforcement and remedial instruction.					
9. There are provisions for varied learning activities or situations appropriate for the subject matter and objectives.					
10. Specified materials are available and working.					
VII. Evaluative measures					
1. The pre-test is relevant to the subject matter.					
2. The formative test is relevant to the subject matter.					
3. The post-test is relevant to the subject matter.					
4. The pre-test is worded clearly enough to be understandable in the target-learners' level.					
5. The formative test is worded clearly enough to be understandable in the target-learners' level.					
6. The post-test is worded clearly enough to be understandable in the target-learners' level.					
VIII. Physical aspects of the modules					
1. The type of paper is suitable.					
2. The cover material is suitable.					
3. The cover design is relevant.					
4. The cover design is attractive.					
5. The type of print is suitable.					
6. The size of print is suitable.					
7. The size of the whole module makes it handy and convenient.					

Other comments/suggestions to improve the module: _____

_____

_____

Name of Evaluator

_____

School

Division

INDONESIA

Topic : Evaluating distance education programmes: (a theoretical model)

Reported and written by : Dr. Haris Mudjiman

Introduction

The model as presented here is trying to evaluate the effectiveness of a distance education programme through evaluating changes at the receiving end—the learners, their families, and their community.

Through this kind of evaluation, feedback may be used to increase learners' exposure to the programme, learners' willingness to behave as expected by the programme, and the impact of the learners (new) behaviour upon themselves, their families, and their community.

These imply, that the feedback may be used to improve the coverage and the quality of the programme itself—its learning material, its presentation, as well as its operation.

Readers may note that this model is primarily a theoretical model and its usage may not be confined to distance education learning. It is equally applicable to classroom situations. What makes it a slightly more relevant to distance learning is the inclusion of variables like the family and the community for consideration while evaluating any programme impact. Community education courses are widely becoming an area of interest to the distance teachers and the impact of these programmes is being usually measured in terms of learners (i) information seeking skills, (ii) information utilization skills and (iii) information disseminating skills.

Evaluation questions

Following the basic concept, in evaluating the effectiveness of a distance education programme, there are eight main evaluation questions to be presented and one background question to be answered:

a) How were the learners *exposed* to the distance education programme—why?

b) Did the learners *understand* the learning materials presented by the programme—why?

c) Did the learners *like* the learning materials presented by the programme—why?

d) Did the learners feel the *need* to adopt the (new-) behaviour pattern as suggested by the learning materials—why?

e) Did the learners feel that they were *able* to adopt the (new-) behaviour pattern as suggested by the learning materials—why?

f) Did the learners have the necessary *motivation* (M) to adopt the (new-) behaviour pattern as suggested by the learning materials—why?

g) Did the learners actually *behave* (B) as suggested by the learning materials—why?

h) Were there any impacts on the learners' (new-) behaviour pattern on self, family or community?

i) What were the learners' traits, their family's traits, and their community's traits?

Elaboration

Each evaluation question needs to be elaborated in a logical way to cover all issues of the distance education programme as suggested in the Introduction. Thus:

a) With regard to learners' exposure to the distance education programme, questions should cover (sub-) issues such as:

   i) The efficiency of the Distance Education Research and Development Office, which 'transmits' the education to the learners.

   ii) The availability of the printed materials or other educational media which the learners are supposed to be exposed to.

   iii) The learners' opportunity to expose themselves to the programme.

b) With regard to learners' motivation development in order to behave as expected by the programme, questions should cover (sub-) issues like:

   i) Learners' understanding of the learning materials, (as measured by tests) which may relate to the content of the learning materials, their structure or presentation, etc.

   ii) Learners' liking of the learning materials, which also may relate to the content of the learning materials, their structures, their advantages for their daily or future life, etc.

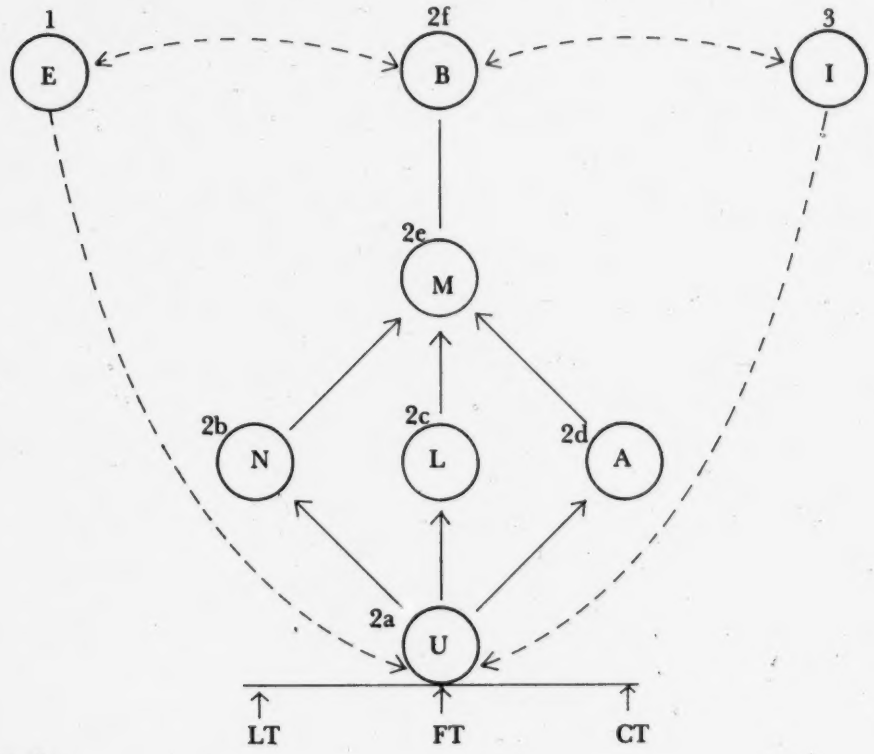
   iii) Learners' need to behave as expected by the learning materials of the programme, which may relate to their basic needs to be fulfilled, their expectation, etc.

   iv) Learners' perception of their ability to adopt the (new-) behaviour pattern as suggested by the programme, which may relate to the feasibility of the programme to be put into practice by the learners; etc.

c) With regard to learners' behaviour, questions should cover (sub-) issues like the concordance of their behaviour with the expected, the continuity of the behaviour, etc.

d) With regard to the impacts of the learners' behaviour on self, their family, or community, questions should cover (sub-) issues like learners' perception of any changes which occur, which can be thought of as a consequence of the learners' (new-) behaviour.

Evaluating Distance Education Programmes: (a theoretical model)



Explanation

E = Learners' *exposure* to the programme

U = Learners' *understanding* of the learning materials provided by the programme.

L = Learners' *liking* of the learning materials of the programme.

N = Learners' *feeling of need* to behave as expected by the programme.

A = Learners' feeling of *ability* to behave as expected by the programme.

M = Learners' *motivation* to behave as expected by the programme.

B = Learners' actual *behaviours.*

I = Impacts of learners' behaviour on themselves, families, or community.

LT = *Learners' traits.*

FT = *Family's traits.*

CT = Community's traits.

a) Learners' exposure (E) to the programme is a pre-condition for expecting any change of behaviour.

b) For behaving as expected, the learners should *understand* (V) what are conveyed by the programme, should *like* (L) what are conveyed by the programme, should feel a *need* to behave as expected by the programme, and should feel *able* to behave as expected by the programme.

c) If all these factors are positive, the learners will have a sufficiently strong motivation (M) behave as expected by the programme.

d) The (new-) behaviour will expectedly give some positive impacts (I) upon the learners' themselves, or their family, or their community. If that happens, there will be a positive feedback loop which will strengthen the learners' motivation to continue behaving as expected by the programme—and stay in the programme. If the impacts are 'neutral' or negative, there will be a 'neutral' or negative feedback loop which may make the learners stop behaving as expected by the programme—or quit following the programme.

e) The learners' exposure to the programme, their motivation-development processes to behave as expected by the programme, and the impact of their (new-) behaviours upon selves, family, or community, will very much be influenced by the learners' traits (LT), their families' traits (FT), and their community's traits (CT).

ANNEX

COMMENTS AND NOTES ON SECTIONS 1, 2 AND 3

Annex

COMMENTS AND NOTES ON SECTIONS 1, 2 AND 3

The materials were reproduced as a whole or a careful selection was made of the parts relevant to the needs of the countries in the region.

In few cases, some reviewers observed that they would like to make further amendment before the use of particular materials. As some other users may also find, such suggestions valuable in adapting materials for use in their countries, the proposed amendments are summarized in this Annex.

Section I – Course production

Some specialists after reviewing the exemplars were of view that the sequence in the list of contents would need to be arranged according to specific instructional development model adopted by a country. A view was also expressed that the paper on formation of learning objectives should preferably precede the one for lesson writers.

Regarding material on writing modules for distance learning, further elaborations were recommended by a few observers. These can be attempted, if so desired, by the countries using this material.

Section II – Support services

Topic: Tutorial system

a) In the member countries now participating in the seminar, the tutorial material is centrally developed by the institutions engaged in distance education. Therefore any attempt on the part of individual tutors to develop supplementary learning materials will jeopardize the system.

b) There are instances of duplication/repetition in the document–for example tutor's role, and counselling role of the tutor can be brought under the same heading. Similarly, student problems should be under the same heading–that is, Item 2 of the paper.

c) There is hardly any possibility for tutor–student contact before the enrolment. Therefore Item 3 needs re-thinking.

d) With these little amendments the document can be used in training.

Topic: Examples of tutorial practices

This is fairly good material. Examples are convincing. However, the group responsible for the comments felt that brevity should be exercised in selection of the examples for training and guidance purpose.

Topic: Selecting appropriate media

The group felt that the material needs extensive revision and could only serve as a broad indicator of advantages or disadvantages in the use of different media and their mixes.

Section III – Assessment and evaluation

The group expressed its general satisfaction over the kind and nature of material included in this section. However, some useful suggestion were made as follows:

Topic: An overview of assessment and evaluation

a) The scope of evaluation and assessment of functional education programmes be enlarged in terms of their impact on community, changes in farmers methods and attendance in agricultural extension meetings etc.

b) For in-service courses some system of incentives be introduced to ensure trainees active participation and interest and while assessing and evaluating their performance their training outputs, number of attendance hours etc. should be taken into account.

c) The suggestion in the exemplar regarding course 'remake' and other forms of modification was generally appreciated.

Topic: Assessment and evaluation

The paper was considered as quite a comprehensive document dealing with almost all aspects of assessment and evaluation.

Topic: Evaluation instrument for a module development

It was felt that the form in which the paper has been included lacked necessary details. A valuable edition of this material could be made by including information on the ways by which collected data on evaluation can be further made use of.

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LIST OF SELECTED PUBLICATIONS RELATING TO DISTANCE EDUCATION PUBLISHED BY THE UNESCO REGIONAL OFFICE, BANGKOK

Distance learning for teacher education (3 volumes). 1982 (ACEID)

Training of personnel for distance education. 1984 (ACEID)

Basic training programme in educational planning and management (seven books as materials for correspondence courses). 1982 (EPMS)

Pareek, Udai and T.V. Rao. Handbook for trainers in educational management with special reference to countries in Asia and the Pacific. 1981. 273 p. Chapter Eighteen – Distance training (EPMS)

Directory of institutions of higher education in Asia and the Pacific engaged in distance education. 1982. 55 p. (Higher education).

Distance education in higher education; report of an inter-country visit-cum-mobile workshop. 1983. 63 p. (Higher education)

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The Asian Programme of Educational Innovation for Development (APEID) has as its primary goal to contribute to the building of national capabilities for undertaking educational innovations linked to the problems of national development, thereby improving the quality of life of the people in the Member States.

All projects and activities within the framework of APEID are designed, developed and implemented co-operatively by the participating Member States through over one hundred national centres which they have associated for this purpose with APEID.

The 24 Member States participating in APEID are Afghanistan, Australia, Bangladesh, China, Fiji, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Samoa, Singapore, Socialist Republic of Viet Nam, Sri Lanka, Thailand and Turkey.

Each country has set up a National Development Group (NDG) to identify and support educational innovations for development within the country and facilitate exchange between countries.

The Asian Centre of Educational Innovation for Development (ACEID), an integral part of the Unesco Regional Office for Education in Asia and the Pacific in Bangkok, co-ordinates the activities under APEID and assists the Associated Centres (AC) in carrying them out.

The eight programme areas under which the APEID activities are organized during the third cycle (1982-1986) are:

1. Universalization of education, access to education at first level by both formal and non-formal means;
2. Education for promotion of scientific and technological competence and creativity;
3. Education and work;
4. Education and rural development;
5. Education and urban development;
6. Educational technology with stress on mass media and low-cost instructional materials;
7. Professional support services and training of educational personnel;
8. Co-operative studies, reflections and research related to educational development and future orientations.